FINLUX

CT-2118T

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TECHNICAL DATA

CRT PANEL	
Visible Picture	20" / 21" / 28"
Deflection Angle	90° / 110°
Vertical Frequency	50Hz
Horizontal Frequency	15.625Hz

ELECTRONIC

Program Number	100+AV
[illegible]	Flof text
[illegible]	Cable tuner - 8 MHz spacing for Hyper Band
TV System	European CCIR system
Audio Power	90°2x4 Watt, 110°2x8 Watt, Rms 10% distortion

CONNECTIONS

Euro AV Socket	Include

MAIN STAGE

Mains Voltage	165-260VAC
Mains Frequency	50Hz
Power Consumption	20", 21" 75 Watt, 28" 126 Watt
In Stby Mode	20", 21" 7 Watt, 28" 8 Watt

COMMENDATION FOR SERVICE REPAIRS

1- Use only original spare parts. Only use components with the same specifications for replacement.
2- Original fuse value only should be used.
3- Main leads and connecting leads should be checked for external damage before connection.
Check the insulation.
4- Parts contributing to the safety of the product must not be damaged or obviously unsuitable.
This is valid especially for insulators and insulating parts.
5- Thermally loaded solder pads are to be sucked off and re-soldered.
6- Ensure that the ventilation slots are not obstructed.
7- Potentials as high as 25 KV are present when this receiver is operating. Operation of the receiver outside the cabinet or with back cover removed involve a shock hazard from the receiver.
Servicing should not be attempted by anyone who is not thoroughly familiar with the precautions necessary when working on high voltage equipment.
Perfectly discharge the high potential of the picture tube before handling the tube. The picture tube is highly evacuated and if broken.
Glass fragments will be violently expelled.
Always discharge the picture tube anode to the receiver chassis to keep of the shock hazard before removing the anode cap.
8- Keep wire away from the high voltage or high temperature components.
9- When replacing a wattage resistor in circuit board, keep the resistor 10 mm away from circuit board.

ANDLING OF MOS CHIP COMPONENTS

MOS circuit requires special attention with regard to static charges. Static charges may occur with any highly insulating plastics and can be transferred to persons wearing clothes and shoes made of synthetic materials. Protective circuits on the inputs and outputs of mos circuits give protection to a limited extend only due to time of reaction.

Please observe the following instructions to protect the components against damage from static charges.

1- Keep mos components in conductive package until they are used. Most components must never be stored in styropor materials or plastic magazines.
2- Persons have to rid themselves of electrostatic charges by touching MOS components.
3- Hold the component by the body touching the terminals.
4- Use only grounded instruments for testing and processing purposes.
5- Remove or connect MOS ICs when operating voltage is disconnected.

RAY RADIATION PRECAUTION

1- Excessive high voltage can be produce potentially hazardous X-RAY radiation. To avoid such hazard, the high voltage must not be above the specified limit. The nominal value of the high voltage of this receiver is 25KV at zero beam current (minimum brightness) under 220V AC power source. The high voltage must not under any circumstance, exceed 30KV. It is recommended the reading of the high voltage be recorded as a part of the service record. It is important to use an accurate and reliable high voltage meter.
2- The primary source of X-RAY radiation in this TV receiver is the picture tube. For continued X-RAY radiation protection, the replacement tube must be exactly the same type tube as specified in the part list.

ERVICE MENU

The service menu is entered by pressing a special 4-digit code if the feature menu is displayed and TV is in FE-mode. While TV isn't in AV Mode and fetura menu is displayed, pressing sequence of digits 1923 will enter the TV to service mode and service menu will be displayed.

OPTIONS

Option Byte 1: 76543210

B0 1: B/G Standard available 0: Not available
B1 1. DK Standard available 0: Not available
B2 1. I Standard available 0: Not available
B3 1: L Standard available 0: Not availabie

B5-4 TTX National Character Set Group

00 - Set1	ENGLISH, GERMAN, SWEDISH, ITALIAN, FRENCH, SPANISH, CZEKOSLOVAKIAN, RUMANIAN
01 - Set 2	POLISH, GERMAN, SWEDISH, ITALIAN,FRENCH, SERBO-CROATIAN, CZEKOSLOVAKIAN, RUMANIAN
1X - Set 3	ENGLISH, GERMAN, SWEDISH, ITALIAN, FRENCH, SPANISH, TURKISH, RUMANIAN

B7-6 Tuner Type
00 : Alps
01 : Temic
10 : Philips UV1316
11 : Thomson/Orega

Option Byte 2: 76543210

B0: AV-2 1	: AV-2 available	0: AV-2 Not Available
B1: VHS 1	: SVHS available	0: SVHS Not Available
B2: TR 1	: Turkish language available	0: Turkish Language not available
B3: ES 1	: Ecoswitch available	0: Ecoswitch not available
B4: CL 1	: Child Lock available	0: Child Lock not available
B5: HP 1	: Headphone available	0: Headphone not available
B6: SW 0	: Subwoofer available	1: Subwoofer not available
B7 PT 1	: 4/3 Picture tube	0: 16/9 Picture tube

Options B4-7 are only relevant if the corresponding modules are present in the software

Option Byte 3: 76543210

B0: CR 1.	: One Crystal application	0: Two Crystal application (for NTSC playback)
B1: SS 1.	: Intercarrier application	0: QSS application
B2: APR 1	: APR ON	0: APR OFF
B3: OSD 1	: OSD contrast control ON	0: OSD contrast control OFF
B4: BS 1	: Blue screen disabled	0: Blue screen enabled
B5: AVL 1	: AVL ON	0: AVL OFF
B6: CLP 1	: Clipping Mode: compromise	0: reduce tone (MSP)
B7: STB 1	: Stanby after power on	0: No standby after power on

GEOMETRY... (90 deg Chasis)

V.SIZE 4/3 50Hz
V.SIZE 16/9 50Hz
V.SIZE 4/3 60 Hz
V.SIZE 16/9 60 Hz
V. POS
H.POS

GEOMETRY... (110 deg Chasis with STV9306 IC)

V.SIZE
V.POS
V.C.CORR
V.S.CORR
H.SIZE
H. PINC.CORR
H. KEYS.CORR
H.COR.CORR
H. POS

VIDEO...

R GAIN
G GAIN
B GAIN
R CUTOFF
G CUTOFF

TUNER/IF...

AGC
PIF COARSE
PIF FINE
PIF C OARSE L'
PIF FINE L'

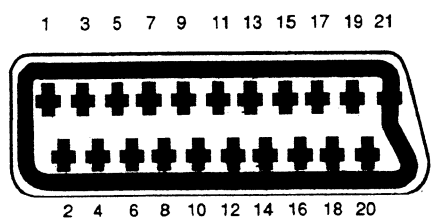
> : < is the VCO status indicator for adjusing the PIF to 38.9Mhz for BGDKIL and 33.9 for L' standards thru bus controlled VCO.

The VCO status is read from the read register of STV224X and guides whether to Increase / Decrease the VCO registers to attain VCO OK Status. I For doing VCO adjustment, Feed a 38.9MHz Carrier as IF input and adjust PIF Coarse and fine parameters to get VCO OK Status.

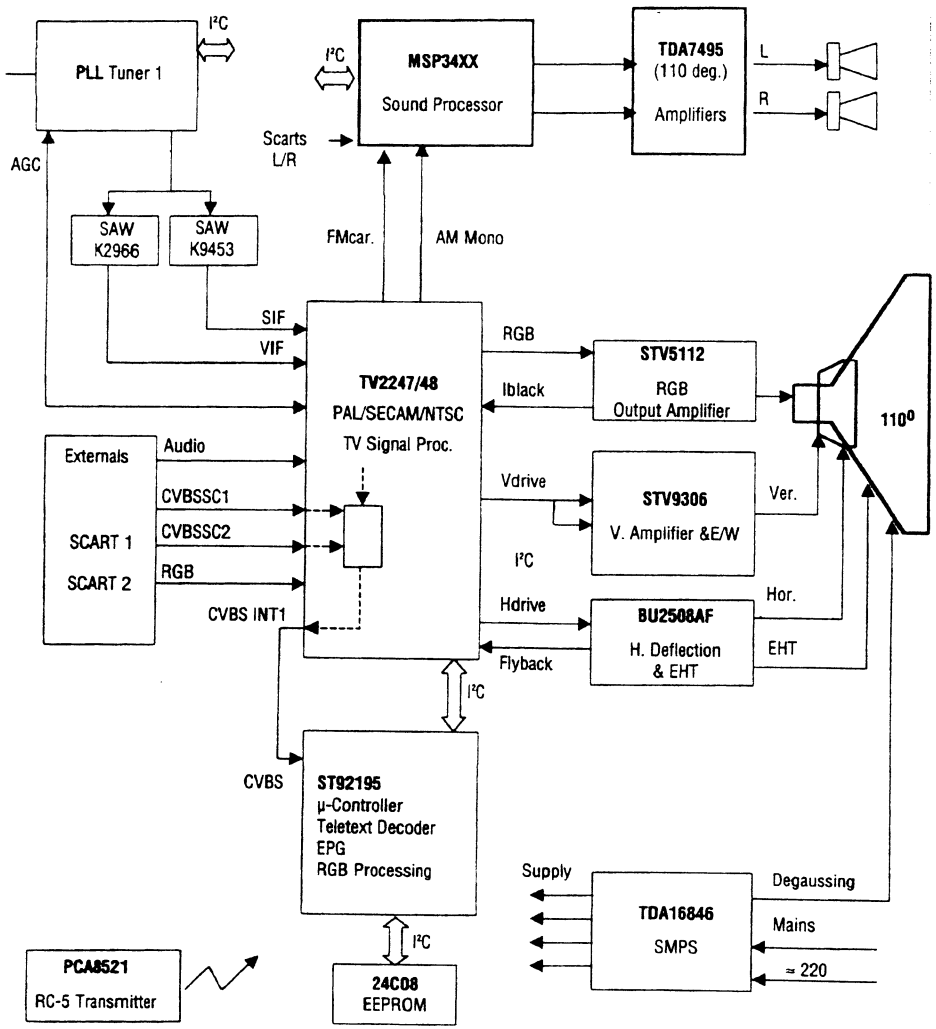
For doing VCO L1 adjustment, Feed a 33.9 MHz carrier as IF input and adjust PIF Coarse L' and PIF Fine L' to get VCO OK Status.

ECIFICATIONS OF THE CONNECTOR
RO SCART)

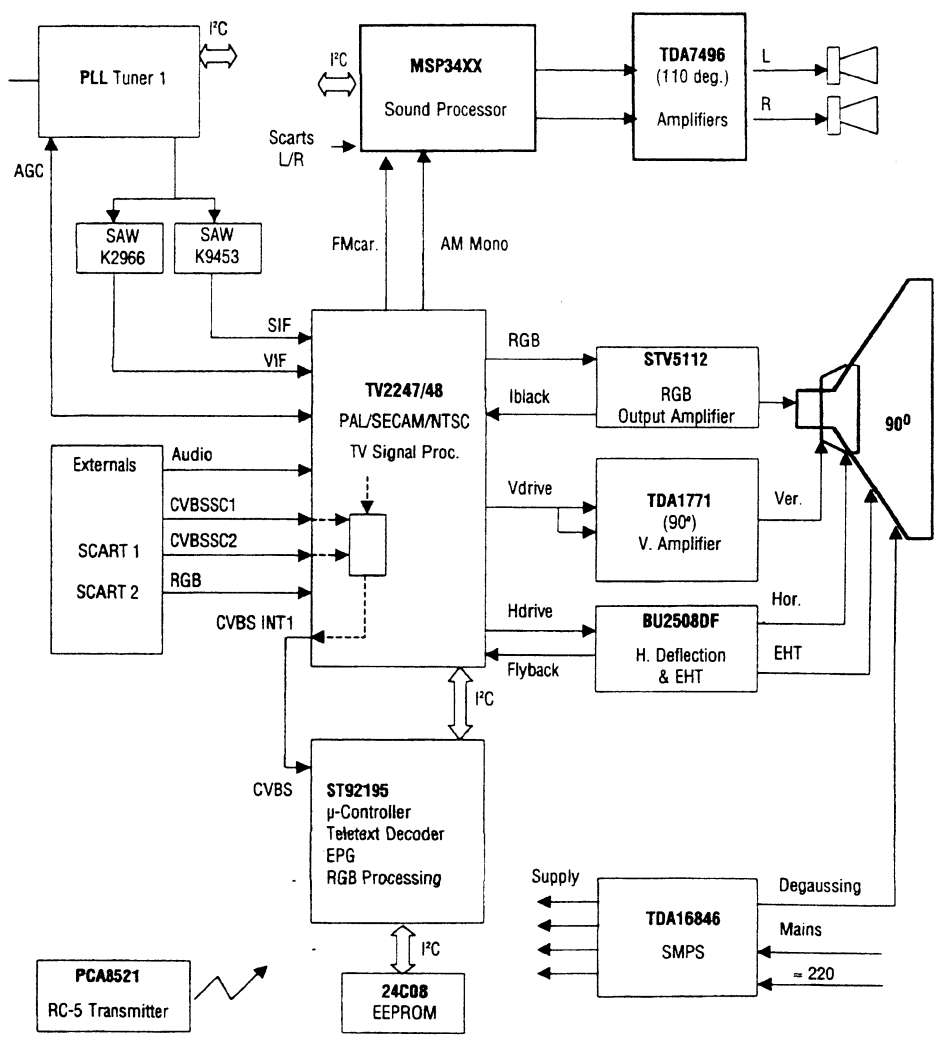
I- Audio output 1. right channel 0.5 VRMS/<l k 0
2- Audio input 1. right channel 0.5 VRMS (connected to No.6)
3- Audio output 2. left channel 0.5 VRMS (connected to No.1)
4- GND (audio)
5- GND
6- Audio input 2. left channel 0.5 VRMS/>10k 0
7- RGB input, blue (B)
8- Switch signal video (status)
9- GND
10- Reserved for clock signals (not connected)
11- RGB input, green (G)
12- Reserved for remote control (not connected)
13- GND
14- GND switch signal RGB
15- RGB input, red (R)
16- Switch signal RGB
17- GND (video)
18- GND19- Video output 1 Vpp/75 ohm
20- Video input 1 Vpp/75 ohm
21- Shield



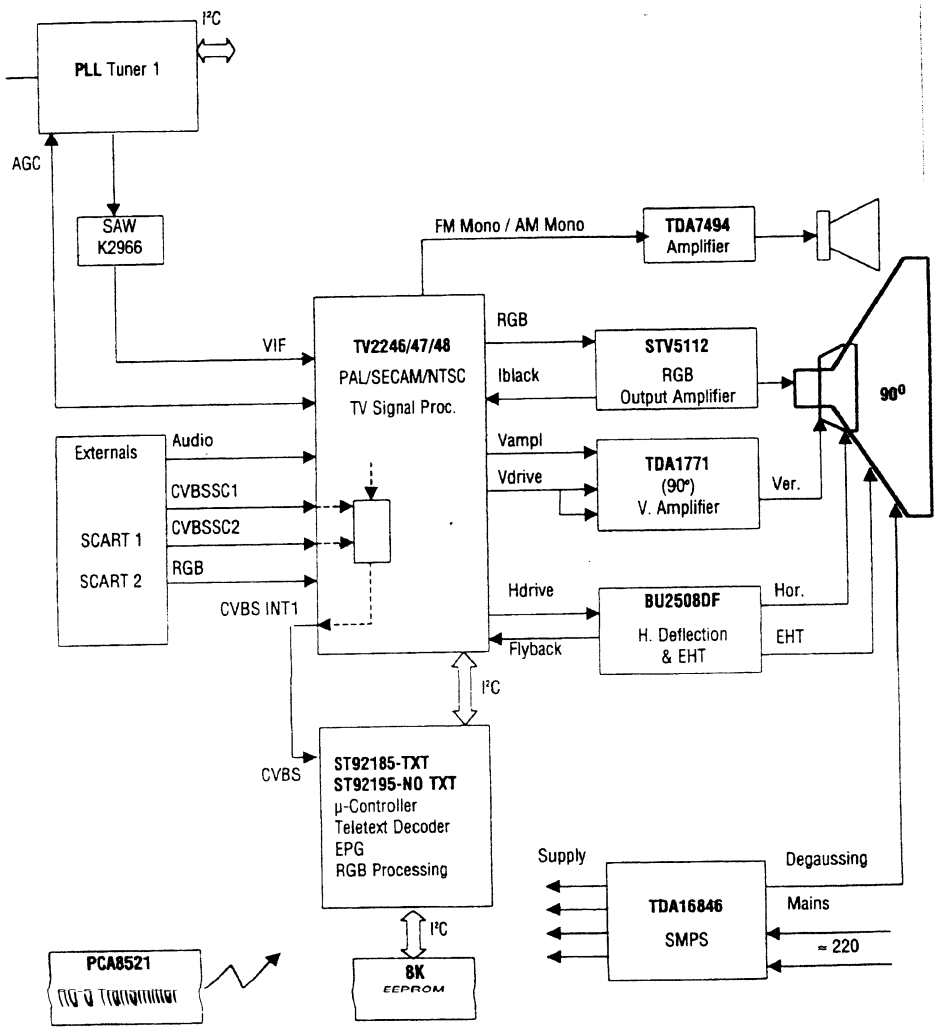
90A 110° STEREO CHASSIS



90A 90° STEREO CHASSIS



90A 90° MONO CHASSIS



Basic Hardware Specification

The following are the components that a PT90A controlled system consists of;

- ST921x5 TV+OSD+(TXT) controller with PT90A software inside 24C08 1024*8 bit NV-Memory (EEPROM) for storage of favourite programmes,
- preffered sound and picture controls, service menu settings.
- STV224x I²C bus controlled multi-standard one-chip TV-processor
- Pre-programmed RC-5 remote control transmitter
- Temic-Alps-Philips-Thomson-Orega PLL Tuners
- 90° Chasis
- TDA 1771 Vertical Deflection IC
- 110° Chasis
- STV9306 I²C bus controlled vertical deflection and E-W correction circuit

For stereo systems the following optional device is supported MSPXX(D/G) German and NICAM stereo sound decoder. Communication between the microcontroller (master) and all related devices (slaves) is carried out by means of the two-wire bidirectional I²C bus. This chapter describes all of the functions and hardware equirements of PT90A. The overall control of the system is handled by the microcontroller which performs the following;

- Decodes the serial data from the remote controller
- Scans the local keyboard
- Controls the OSD
- Exchanges information via the serial I²C bus
- Selects the proper tuner, tuner band
- Selects the proper IF and the sound demodulator
- Analogue picture controls
- Switches between internal and external audio and video signals

5.1 Interface Description

5.1.1 Remote Control Handset.The remote control handset which is compatible with RC-5 standard.

5.1.2 Remote Control Decoding

The infrared remote control pulses are modulated at the standard RC-5 frequency of 36 KHz. The remote control signal (active HIGH) from the IR-receiver (TFMK1380T) is fed to the external interrupt input (IR-INPUT) of the microcontroller. Finally the video identification in STV224x is checked to make sure that the search terminated on a video carrier. For SECAM L' (France VHF) channel search starts with the highest channel frquency and all steps atre carried out in the reverse order. When micro search fails to find a signal in a channel, it will tune the standardised channel frequency.

Sound Systems

PT90A supports stereo sound system as well as mono both controlled via I²C bus from the video processor (Sn/224x).

Mono Sound Sysfem

The only available sound control is volume. In FE-mode, after tuning a programme, the system always selects the sound witta the following priority.

AMSound

If a transmitter is tuned with colour standard SECAM L/L', the sound will be forced to AM.

The AM sound system is automatically forced via the STV224x when positive modulation (SECAM-L or SECAM-L' is selected.

Stereo Sound Sysfem

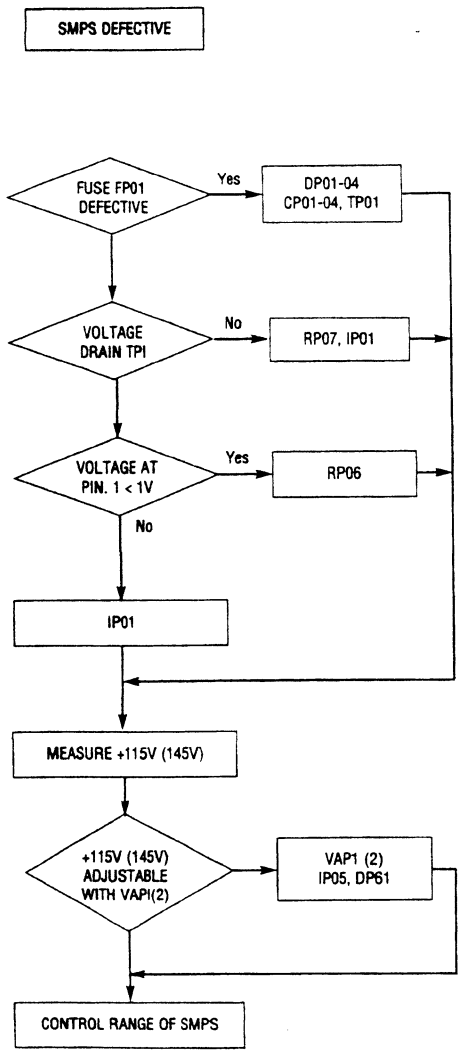
Direct control of the audio functions (on the remote transmitter as individual buttons) are;

personal preference function, volume, mute, mono/stereo/language

Automatic identification and decoding of German Stereo and NICAM sound systems

A. German Stereo (A2):	Mono / Stereo / Dual I / II
B. NICAM Stereo	Mono / Stereo / Dual I / II
C. Mono	Only mono

TROUBLESHOOTING GUIDE FOR SMPS



TROUBLESHOOTING GUIDE FOR MAIN PCB

TROUBLE	CHECK POINTS
No picture	FP01, RP01, DP01-04, TP01, ICV1, ICV2, RD10, RD01, TD02
No sound	DP12, IA01, ICV1, IC01, CA10, CA11, ICM1, X800, R806
Sound distortion	IA01, CA05, ICV2
No color	ICV1, XV01, XV02, CV24
Dark picture	ICV1, ICV2, RV94, screen adj.
Horizontal size	CD03, CD04, CD05, LD01, CD06, ID21, DD22, +115V adj.
Verticable size	ID21, (ID41), CD26, CD44, RD10, RD17, DD07, DD08, RD29, RD50
Horizontal Linearity	LD03, RD14
Verticable linearity	RD49, CD43
Noise picture	TU01, IF adj., AGC adj.
White screen	RD08, ICV2

T921x5
icrocontroller

Microcontroller + OSD + (Teletext decoder) + VPS/PDC/WSS decoder are embeded in one chip, where there are two types with the major difference;

ST92185 No-teletext

ST92195 With teletext

The ST92195 microcontroller is developed and manufactured by STMicroelectronics using a proprietary n-well HCMOS process. Its performance derives from the use of a flexible 256-register programming model for ultra-fast context switching and real-time event response. The intelligent on-chip peripherals offload the ST9 core from I/O and data management processing tasks allowing critical application tasks to get the maximum use of core resources. The ST92195 MCU supports low power consumption and low voltage operation for power-efficient and low-cost embedded systems.

The advanced ST9+ Core consists of the Central Processing Unit (CPU), the Register File and the Interrupt controller. The general-purpose registers can be used as accumulators, index registers, or address pointers. Adjacent register pairs make up 16-bit registers for addressing or 16-bit processing. Although the ST9 has an 8-bit ALU, the chip handles 16-bit operations, including arithmetic, loads/stores, and memory/register and memory / memory exchanges. Two basic addressable spaces are available: the Memory space and the Register File, which includes the control and status registers of the on-chip peripherals. Power consumption of the device can be reduced by more than 95% (Low power WFI).

Up to 28 I/O lines are dedicated to digital Input / Output. These lines are grouped into up to five I/O Ports and can be configured on a bit basis under software control to provide timing, status signals, timer and output, analogue inputs, external interrupts and serial or parallel I/O. A set of on-chip peripherals form a complete system for TV set and VCR applications:

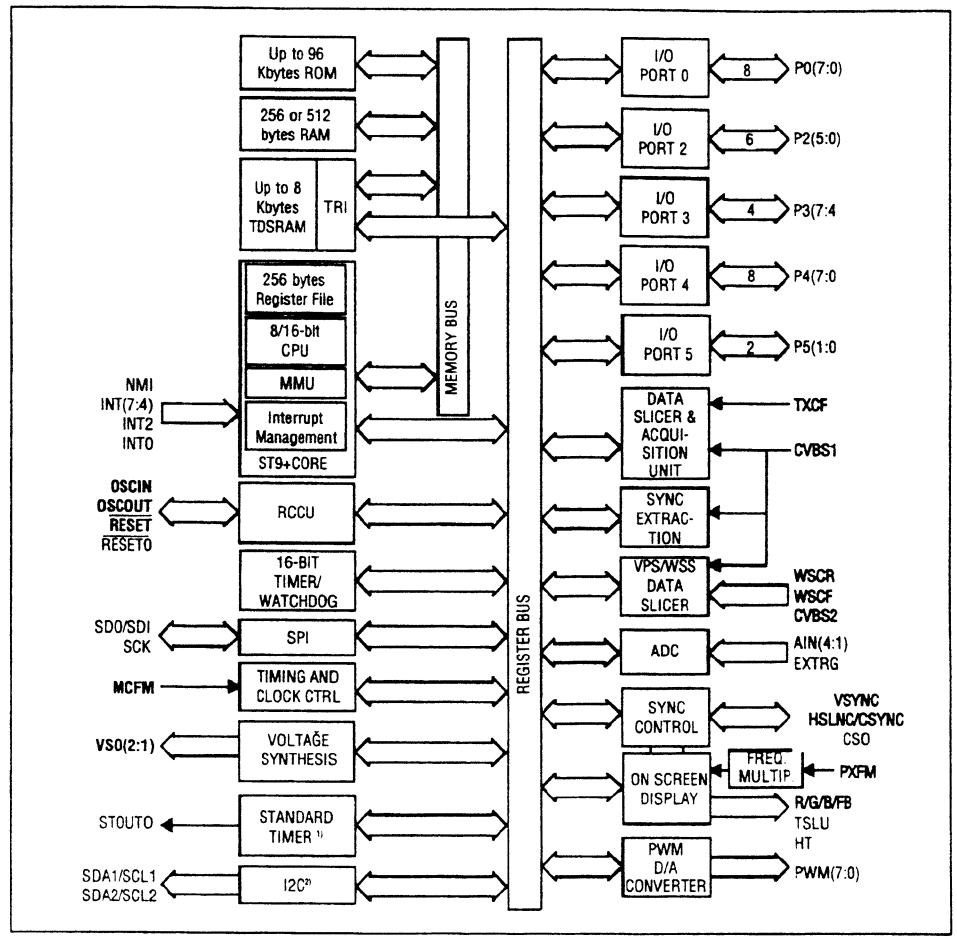
- Voltage Synthesis
- VPS / WSS Slicer
- Teletext Slicer
- Teletext Display RAM
- OSD

Pig. ST921x5 Microcontroller Block diagram

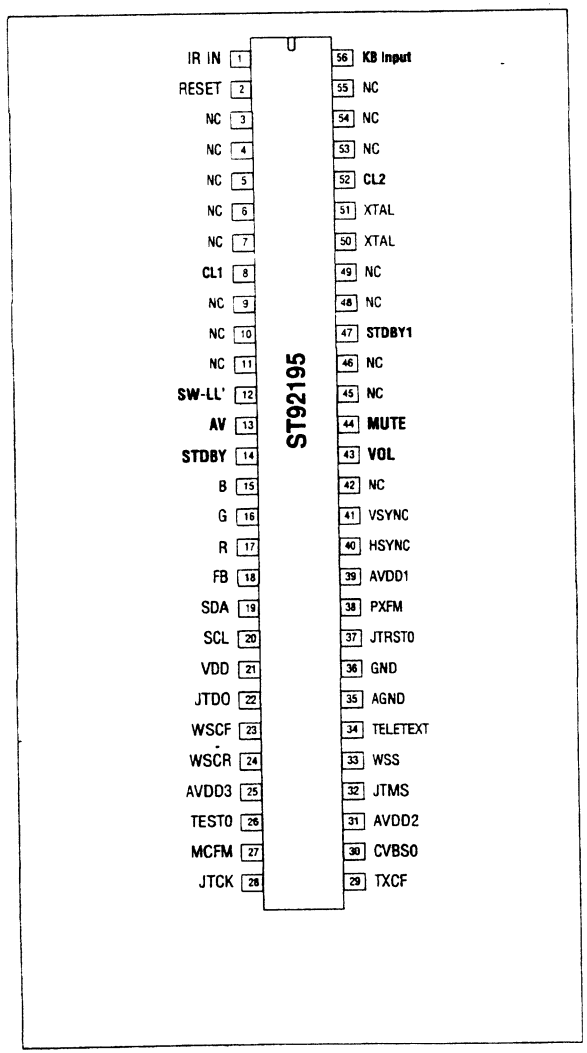
GENERAL FEATURES

- Register File based 8/16 bit Core Architedure with RUN, WFI, SLOW and HALT modes
- 0°C to +700C Operating Temperature Range available
- Up to 24 MHz Operation @ 5V±10%
- Minimum instruction cycle time: 375nS at 16MHz internal clock
- 64K Bytes ROM
- 256 Bytes RAM of Register file (accumulators or index registers)
- 256 Bytes of on-chip static RAM
- 8K Bytes of TDSRAM (Teletext and Display RAM)
- 56-lead Shrink DIP package
- 28 fully programmable I/O pins
- Serial Peripheral Interface
- Flexible Clock controller for OSD, Data Slicer and Core clocks running from one single low frequency external crystal.
- Enhanced Display Controller with 26 rows of 40/80 characters
- Serial and Parallel attributes
- 10x10 dot Matrix, 512 ROM characters, definable by user
- 4/3 and 16/9 supported
- Rounding, fringe, double width, double height, scrolling, cursor, full background colour, semi-transparent mode and reduced intensity colour supported Teletext unit, including Data slicer, Acquisition Unit and up to 8K Bytes
- RAM for Data Storage
- VPS and Wide Screen Signalling slicer
- Integrated Sync Extractor and Sync Controller
- 14-bit Voltage Synthesis for tuning reference voltage
- Up to 6 External Interrupts plus 1 non-maskable interrupt
- 8 x 8-bit programmable PWM outputs with 5V open-drain or push-pull
- Capability
- 16-bit Watchdog timer with 8-bit prescaler
- 16-bit standard timer with 8-bit prescaler usable as a Watchdog timer
- 3-channel Analog-to-Digital converter; 6-bit guaranteed
- Rich instruction set and 14-Addressing modes

Block Diagram



4- Pin description



PINNING

Pin	Symbol	Function
1	P2.0IRIN	IIR Input
2	RESETRESETI	Hardware Reset
3	P0.7NCI/0	Not Used
4	P0.6NCI/0	Not Used
5	P0.5NCI/0	Not Used
6	P0.4NCI0	Not Used
7	P0.3NCI	Not Used
8	P0.2CL1I	SCART 1 status input
9	P0.1NCI/0	Not Used
10	P0.0NCI/0	Not Used
11	P3.7NCI/0	Not Used
12	P3.6SW-LL'OSAW	Filter Switch for L/L'
13	P3.5AV0	Sound switch for two AV source in mono chasis
14	P3.4STDBY0	Standby ON/OFF
15	BB00SD	Blue colour Signal Output
16	GG00SD	Green colour Signal Output
17	RR00SD	Red colour Signal Output
18	BLANKBLANK00SD	Blanking Output
19	P5.1SDAI/0I2C	Data Line
20	P5.0SCL0I2C	Clock line
21	VDDVDD	+5V Digital Supply
22	JTD0JTD0	Test Pin
23	WSCFWSCF	Analog Pin For VPS /WPP slicer line PLL
24	WSCRWSCR	Analog Pin For VPS /WPP slicer line PLL
25	AVDD3AVDD3	+5V Analog VDD For PLL
26	TEST0TEST0	Test pin
27	MCFBMCFB	Analog Pin for VPS/ WSS line PLL
28	JTCKJTCK	Test pin
29	TXCFTXCF	Analog Pin for VPS/ WSS line PLL
30	CVBS0CVBS0	Test pin
31	AVDD2AVDD2	Analog Power Supply
32	JTMSJTMS	Test pin
33	CVBS2CVBS2ICVBS	In for VPS/WSS
34	CVBS1CVBS1ICVBS	In for Teletext Slicer
35	AGNDAGND	Analog Ground
36	GNDGND	Digital Ground
37	JTRST0JTRST0	Test pin
38	PXFMPXFM	Analog pin for display pixel freq. multiplier
39	AVDD1AVDD1	Analog Power Supply
40	HSYNCHSYNCI	Horizontal Sync Input

PINNING

Pin	Symbol	Function
41	VSYNCVSYNCI	Vertical Sync Input
42	P4.0NCI/O	Band Switch 1
43	P4.1VOL0PWM	Gain Control for Audio amp.
44	P4.2MUTE0	Mute output pin
45	P4.3NCI/O	Not Connected
46	P4.4NCI/O	Not Connected
47	P4.5STDBY10	Eco Switch Control
48	P4.6NCI/0	Not Connected
49	P4.7NCI/0	Not Connected
50	XTALXTAL	Clock Oscillator
51	XTALXTAL	Clock Oscillator
52	P2.5CL2ISCART2	Status Input
53	P2.4NCI/OLED	Output Pin
54	P2.3NCI/O	Not Connected
55	P2.2NCI/O	Not Connected
56	P2.1KBInputI	Key Board Input

RESET

Reset input is an active-low one. ST921x5 is initialized by the RESET signal.

When the RESET deactivated, programme execution starts from the 00H and 01H addressed programme memory locations.

R/G/B/BLANK

The video colour analogue DAC outputs are Red / Green / Blue / Fast Blanking. -

XTAL

These pins are used to connect parallel resonant crystals of 4 MHz

AV Status

Logic Level Control (High or Low)

Pin 8 and Pin 52 monitor the status of the AV SCART connectors. The controller detects the transitions at these pins. When the signal goes from high to low, the TV set will automatically switch to AV mode. The signal going from low to high will lead the TV set to go back to the previous source. Voltage Level Control (O...12V)

Voltage measurement values are taken from these pins. 4:3 or 16:9 picture ratio from SCART or TV mode selection is dependent on the voltage values at these pins. User control always has a priority in both TV and

AV mode. Following the change of source or the channel, 4:3 format is assumed by default. The voltage values stated below are divided by 3 at the microcontroller pins.

AV Status (Pin 8)Picture Ratio

- 0 - 2.0 VTV Mode
- 2.0 - 4.5V No change
- 4.5 - 7.0V 16:9 Scart
- 7.0 - 9.0V No change
- 9.0 - 12.0V 4:3 Scart

Keyboard Scan Lines

The 4 keys of the local keyboard are scanned by an ADC used by the microcontroller.

Table Local Keyboard

Name CodeTV ModeTXT Sub mode

- Volume Down0Volume -Volume -
- Volume Up1Volume +Volume +
- Programme Down2Programme -Page -
- Programme Down3Programme +Page +

Power Mode Control

The STDBY (pin 14) output specifies the mode which the set is in; Stand-by mode or Operating mode.

Table Power Modes:

ST-BYMode

- 1-Stand-by
- 0-Operating

I²C Lines

Pin 20 (SCL) and Pin 19 (SDA) accept inputs from the I²C bus. I²C is a 2-wire bi-directional bus. PT90A has an on-chip bit-level I²C interface. This means the bus arbitration, the reception and transmission of data bits and the generation of START and STOP are manipulated by the hardware. The software must be able to handle these bits (i.e. save a received bit and prepare the bits to be transmitted). If a transmission does not succeed, the software will retry for 5 times. If the bus is occupied for more than 1.18 ms. the microcontroller will attempt to free the bus. PT90A supports a 1K EEPROM (M24C08-BN6), used for storage of analogue controls, tuning data for 100 pre-selected programmes and options. The I²C addresses of the EEPROM is described in the following chapters. Furthermore the videc-processor STV224x is controlled via I²C bus on address 8AH.

24C08
Non-Volatile Memory

These I²C-compatible electrically erasable programmable memory (EEPROM) is organized as 1024 x 8 bit and operate with a power supply of 5 V. The memory behaves as a slave device in the I²C protocol, with all memory operations synchronized by the serial clock. Read and Write operations are initiated by a START condition, generated by the bus master. The START condition is followed by a Device Select Code and RW bit terminated by an acknowledg bit.

Table 6. DC Characteristics

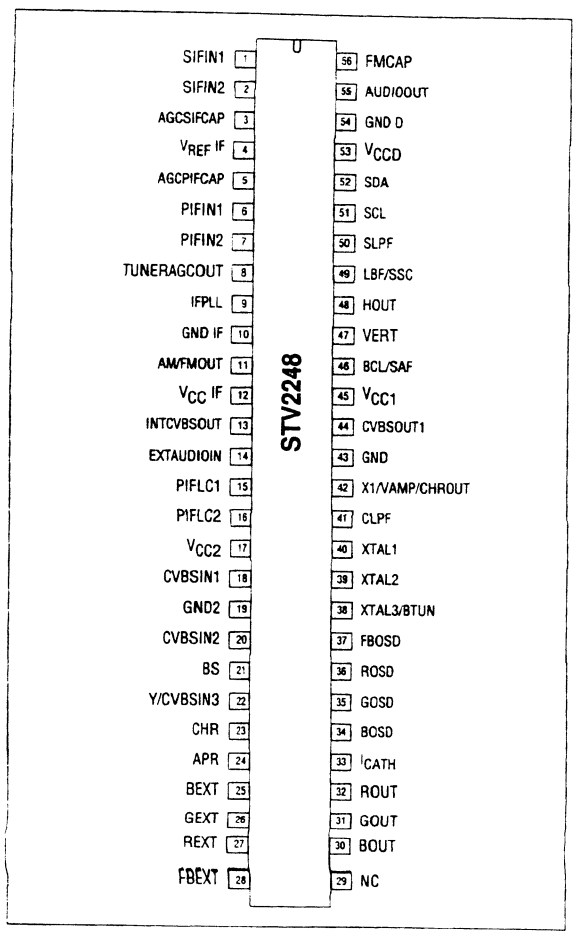
(T_A= 0 to 70°C, -20 to 85°C or - 40 to 85°C; Vcc = 3V to 5.5V, 2.5V to 5.5V or 1.8V to 5.5V)

Symbol	Parameter	Test Condition	Min.	Max.	Unit
I_{LI}	Input Leakage Current	$0V \le V_{IN} \le V_{CC}$	-	±2	µA
I_{LO}	Output Leakage Current	$0V \le V_{OUT} \le V_{CC}$ SDA in Hi-Z	-	±2	µA
I_{CC}	Supply Current (ST24 series)	V_{CC} = 5V, fc= 100kHz (Rise/Fall time < 10ns)		2	mA
	Supply Current (ST25 series)	V_{CC} = 2.5V, fc= 100kHz		1	mA
I_{CC1}	Supply Current (Standby) (ST24 series)	$V_{IN} = V_{SS}$ or V_{CC} VCC = 5V		100	µA
		$V_{IN} = V_{SS}$ or V_{CC} V_{CC} = 5V, fc= 100kHz		300	µA
I_{CC2}	Supply Current (Standby) (ST25 series)	$V_{IN} = V_{SS}$ or V_{CC} VCC = 2.5V		5	µA
		$V_{IN} = V_{SS}$ or V_{CC} V_{CC} = 2.5V, fc= 100kHz		50	µA
I_{CC3}	Supply Current (Standby) (ST24C08R)	$V_{IN} = V_{SS}$ or V_{CC} VCC = 3.6V		20	µA
		$V_{IN} = V_{SS}$ or V_{CC} V_{CC} = 3.6V, fc= 100kHz		60	µA
I_{CC4}	Supply Current (Standby) (ST24C08R)	$V_{IN} = V_{SS}$ or V_{CC} VCC = 1.8V		10	µA
		$V_{IN} = V_{SS}$ or V_{CC} V_{CC} =1.8V, fc= 100kHz		20	µA
V_{IL}	Input Low Woltage (SCL, SDA)		-0.3	$0.3V_{CC}$	V
V_{IH}	Input High Woltage (SCL, SDA)		$-0.7V_{CC}$	V_{CC} +1	V
V_{IL}	Input Low Woltage (E,PRE,MODE,$\overline{WC}$)		-0.3	0.5	V
V_{IH}	Input High Woltage (E,PRE,MODE,$\overline{WC}$)		V_{CC}-0.5	V_{CC} +1	V
VOL	Output Low Voltage (ST24 series)	I_{CL} = 3mA, V_{CC} = 5V		0.4	V
	Output Low Voltage (ST25 series)	I_{CL} = 2.1mA, V_{CC} = 2.5V		0.4	V
	Output Low Voltage (ST24C08 series)	I_{CL} = 1mA, V_{CC} = 1.8V		0.3	V

STV224X
Multistandard TV Processor

STV224X is a fully bus controlled IC for n/ including PIF, SIF, Luminance, Chrominance and deflection processing. It is a bus controlled PAL / SECAM / NTSC single chip TV Processor. For details of STV224X features please refer to the STV224X datasheet. 110°, 4:3 or 16:9 CRT application. It integrates both vertical deflection and E-W correction circuit necessary for design of 110° chassis it allows designing a PAL / NTSC (BGDKIMN) set with very few external componentsand no manual adjustment.

Pin connections



Pin	Symbol	Function
1	SIFIN1	SIF Input
2	SIFIN2	SIF Input
3	AGCSIFCAP	AGC SIF Capacitor
4	VREF IF	Voltage Reference Filtering
5	AGCPIFCAP	AGC PIF Capacitor
6	PIFIN1	PIF Input
7	PIFIN2	PIF Input
8	TUNERAGCOUT	AGC Tuner Output
9	IFPLL	IF PLL Filter
10	GND IF	IF Ground
11	AM/FMOUT	AM/FM Mono Sound or Stereo Carriers Output
12	V_{CC} IF	5V IF Supply
13	INTCVBSOUT	Internal CVBS Output
14	EXTAUDIOIN	Audio scart Input
15	PIFLC1	LC Input
16	PIFLC2	LC Input
17	V_{CC2}	Video/Luma Supply Voltage (8V)
18	CVBSIN1	Internal Video Input
19	GND2	Video/luma Ground
20	CVBSIN2	External Video Input
21	BS	Black Stretch Capacitor
22	Y/CVBSIN3	Y(SVHS) or CVBS3 External Input
23	CHR	Chroma (SVHS) input
29	APR	Auto Peak Regulation
25	BEXT	External Blue Input
26	GEXT	External Green Input
27	REXT	External Red Input
28	FBEXT	External Fast Blanking Input
29	NC	Not to be connected
30	BOUT	Blue Output
31	GOUT	Green Output
32	ROUT	Red Output
33	I_{CATH}	Cathode Current Measurement Input
34	BOSD	OSD Blue Input
35	GOSD	OSD Green Input
36	ROSD	OSD Red Input
37	FBOSD	OSD Fast Blanking
38	XTAL3/BTUN	3.5XMHz Crystal or Cloche Filter Tuning Capacitor
39	XTAL2	3.5XMHz Crystal
40	XTAL 1	4.43/3.5XMHz Crystal
41	CLPF	Chroma PLL Filter
42	X1/VAM/CHROUT	XTAL1 Control Pin Vertical Amplitude DAC Output and Chroma Reference Signal Output
43	GND 1	Chroma/Scanning Ground
44	CVBSOUT 1	Main Video Switch Output
45	V_{CC1}	Chroma/Scanning Power Supply (8V)
46	BCL/SAF	Beam Current Limiter Control Voltage and Safety input (XRAY)
47	VERT	Vertical Output Pulse
48	HOUT	Horizontal Output Pulse
49	LFB/SSC	Line Flyback Input and Super-sandcastle Output
50	SLPF	Scanning PLL Filter
51	SCL	I²C Bus Clock Input
52	SDA	I²C Bus Data Input
53	V_{CCD}	Digital Supply Voltage (5V)
54	GND D	Digital Ground
55	AUDIOOUT	Main Audio Output
56	FMCAP	FM Demodulation Capacitor

ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter	Value	Unit
V_{CC} 8V	8V supply voltage	10	V
V_{CC} 5V	5V supply voltage	7	V
VESD	Capacitor 100pF discharged via 1.5kΩ serial resistance (Human Body Model)	±2	kV
Toper	Operating Temperature	0,+70	°C
Tstg	Storage Temperature	-55 +150	°C

THERMAL DATA

Symbol	Parameter	Typical Value	Unit
Rth(j-a)	Junction ambient Thermal Resistance (Measured at P_D= 1W) SDIP56	40	°C/W

ELECTRICAL CHARACTERISTICS

Supplies at Typical Values, Tamb =25 °C, I²C bus register at power-on reset value. unless otherwise specified)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
SUPPLY						
V_{CCIF}	IF Circuit Supply Voltage		4.75	5	5.25	V
V_{CCD}	Bus & Digital Supply Voltage		4.75	5	5.25	V
V_{CC1}	Chroma, Scanning Supply Voltage		7.6	8	8.4	V
V_{CC2}	Video Supply Voltage		7.6	8	8.4	V
I_{CCF}	V_{CCIF} Current Consumtion	V_{CCIF} = 5V		TBD		mA
I_{CC5V}	V_{CC5V} Current Consumtion	V_{CCD} = 5V		TBD		mA
I_{CC1}	V_{CC1} Current Consumtion	V_{CC1} = 8V		TBD		mA
I_{CC2}	V_{CC2} Current Consumtion	V_{CC2} = 8V		TBD		mA
P_D	Total Power Dissipation	V_{CC1} = V_{CC2} =8V, V_{CCIF} = V_{CC5V} = 5V		TBD		mW

MSP34XX (D/G)
Multistandard Sound Processor

The MSP34xx (D/G) family of single-chip Multistandard Sound Processors covers the sound processing of all analog TV-Standards worldwide, as well as the NICAM digital sound standards. The full TV sound processing, starting with analog sound IF signal-in, down to processed analog AF-out, is performed on a single chip. It covers all European TV-Standards The MSP 3400 1.0 m CMOS version is fully pin and soft-ware compatible to the MSP 3410, but is not able to de-code NICAM. It is also compatible to the MSP 3400C 0.8 m CMOS version.

The IC is produced in submicron CMOS technology, combined with high performance digital signal processing.

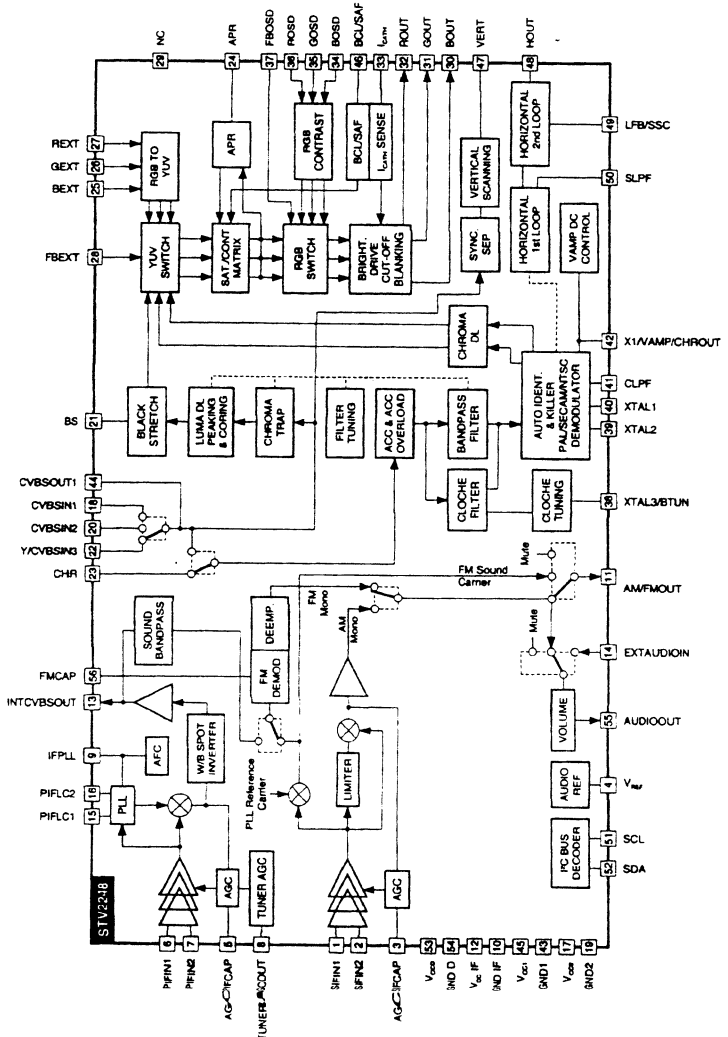
The MSP 3410D is available in a PLCC68, PSDIP64, PSDIP52, and in a PQFP80 package.

Note: The MSP3410D version is fully downward compatible to the MSP 3410B, the MSP 3400B, and the MSP3400C. To achieve full software compatibility with MSP3400C, MSP 3400B, and MSP 3410B, the demodulator part must be programmed as described in the data sheet of MSP 3410B.

MSP 3410D Additional Features

- AVC: Automatic Volume Correction
- Subwoofer Output
- 5-band graphic equalizer (as in MSP 3400C)
- Enhanced spatial effect (pseudostereo/basewidth en-largement as in MSP 3400C)
- Headphone channel with balance, bass, treble, loud-ness
- Balance for loudspeaker and headphone channels in dB units (optional)
- Additional parr of D/A converters for SCART2 out
- Improved oversampling filters (as In MSP 3400C)
- Additional SCART input
- Full SCART In/out matrix without restrictions
- Scart volume in dB units (optional)
- Additional I2S input (as in MSP 3400C)
- New FM-identification (as in MSP 3400C)
- Demodulator- short programming
- Autodetection for- terrestrial TV-sound standards
- Precise bit-error rate indication
- Automatic switching from NICAM to FM/AM or vice versa
- Improved NICAM synchronization algorithm
- Tmproved carrier mute algorithm
- Improved AM-demodulation
- ADR together- with DRP 3510A
- Dolby Pro Logic together with DPL 35xx A
- Reduction of necessary controlling
- Less external components
- Significant reduction of radiation

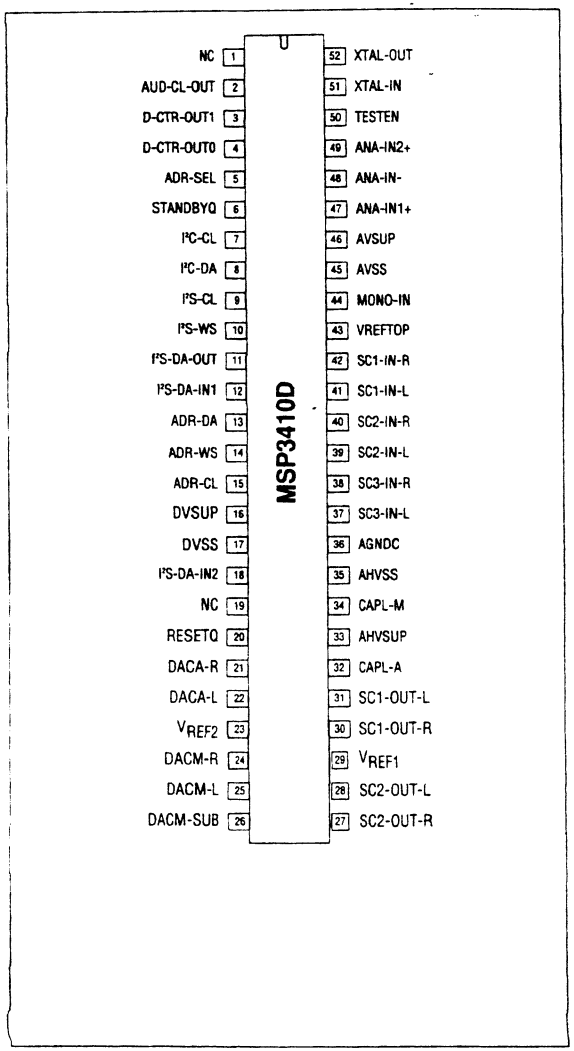
Block Diagram



MAIN FEATURES

- I²C bus control (readl and write modes),
- PIF PLL demodulator, Bus controlled VCO alignment,
- IF positive and negative modulation,
- Digital AFC,
- Tuner delayed AGC output,
- White and Black spot cancellation,
- SIF with QSS or intercarrier structure,
- Built in sound bandpass,
- Multistandard PLL FM demodulator (4.5, 5.5, 6.0,6.5MHz),
- AM demodulator for France,
- FM sound carriers output for Stereo chassis,
- Audio switch for external audio input, Mono chassis,
- Digital volume control,
- Audio Mute,
- Video switch, 3 CVBS inputs, 1 CVBS output which can be used to drive teletext decoder,
- SVHS switch, Y input is combined with CVBS3 input,
- OSD RGB analog inputs, fast blanking detection on OSD fast blanking pin, contrast control capability, oversize blanking capability on OSD fast blanking input,
- External analog RGB inputs with contrast and saturation control (external RGB matrixed in YUV).
- Integrated chroma filters (trap, bandpass, cloche) with automatic alignment,
- Integrated luminance delay line,
- Adjustable peaking on the luminance signal with coring function,
- Black strech circuit,
- PAL / SECAM / NTSC color decoder with automatic identification of standards,
- Integrated chroma delay line,
- Full integrated SECAM decoder,
- Hue control, two selectable matrixes in NTSC mode,
- Automatic flesh control circuit with two selectable characteristics (normal and wide),
- ACC overload circuit,
- Chroma subcarrier output which could be used to drive comb filter circuit,
- Automatic RGB peak regulation (APR).
- Automatic digital cut-off current loop with warm-up detection circuit,
- White point and cut-off point adjustments,
- Beam current limiter control stage,
- High performance synchronization pulses separator,
- Horizontal synchronization with two phase locked loops,
- Integrated VCO, auto-calibration using the chroma crystal reference frequency,
- Automatic time constant selection for the first PLL, 3 selectable time contants,
- Video identification circuit (independant from PLL1),
- Noise detector circuity
- Vertical countdown circuit,
- Automatic 50/60Hz selection circuit,
- Blanking and inserted cut-off pulses position adapted to standard (50 or 60Hz),
- Long blanking mode capability in 60Hz (same blanking as 50Hz standard),
- Possibility to insert cut-off pulses after a vertical oversize blanking signal,
- De-interlace capability,
- Horizontal starting circuit with soft-start capability,
- Horizontal and vertical position adjustments, vertical amplitude control voltage (combined with chroma subcarrier output),
- 4/3, 16/9 selection voltage.

Pin description

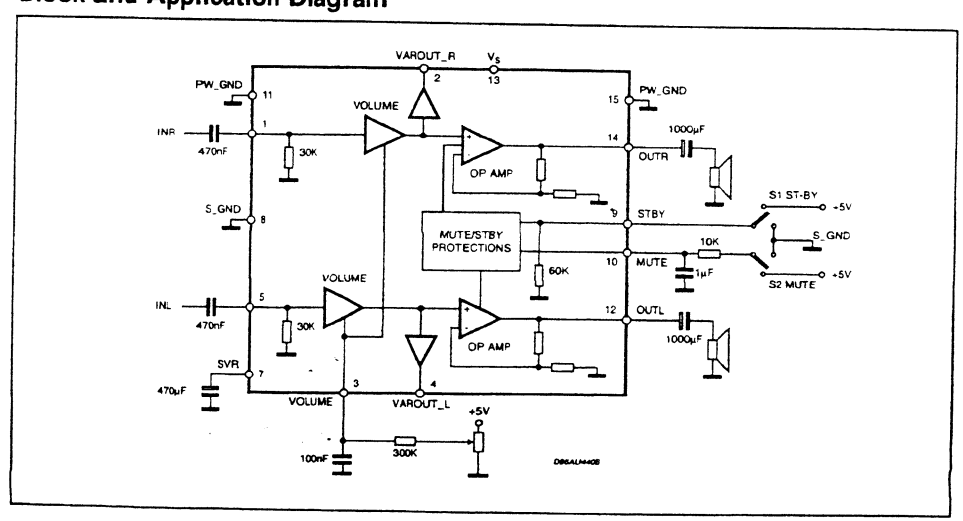


TDA7495
11+11W Amplifier With DC Volume Control

- 11+11W Output Power
- RL = 8Ω @THD = 10% VCC = 28V
- ST-BY and mute functions
- Low turn-on turn-off pop noise
- Linear volume control DC coupled
- With Power Op. Amp.
- No Boucherot Cell
- No ST-BY RC input network
- Single supply ranging up to 35V
- Short circuit protection
- Thermal Overload protection
- Internally fixed gain
- Soft Clipping
- Variable output after volume control
- Circuit multiwatt 15 package

Multiwatt 15
ORDERING NUMBER: TDA7495

Block and Application Diagram

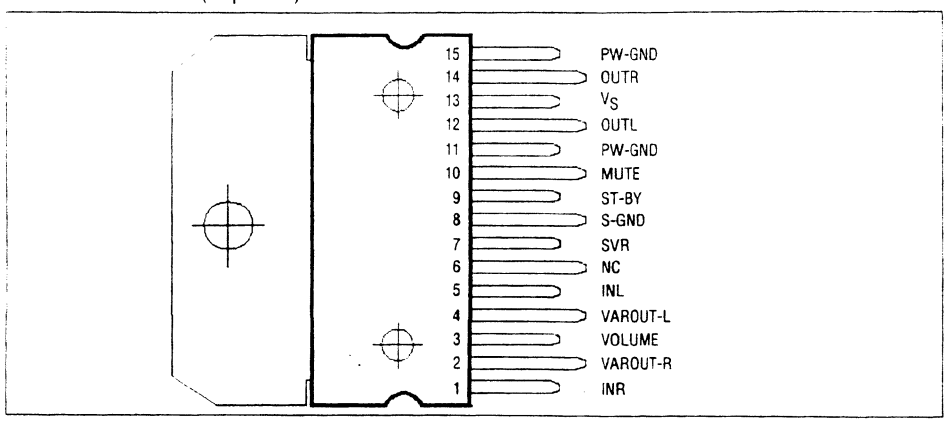


ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter	Value	Unit
V_S	DC Supply Voltage	35	V
V_{IN}	Maximum Input Voltage	8	Vpp
P_{tot}	Total Power Dissipation (Tamb = 70 °C)	20	W
Tamb	Ambient Operating Temperature (1)	-20 to 85	°C
Tstg, Tj	Storage and Junction Temperature	-40 to 150	°C
V_3	Volume CTRL DC voltage	7	V

(1) Operation between -20 to 85 °C guaranteed by correlation with 0 to 70 °C

PIN CONNECTION (Top view)



THERMAL DATA

Symbol	Parameter		Value	Unit
Rth j-case	Thermal Resistance Junction - case		Typ. = 2 Max. = 2.8	°C/W
Rth j-amb	Thermal Resistance Junction - ambient	max.	35	°C/W

ELECTRICAL CHARACTERISTICS

(Refer to the test circuit V_S = 20V R_L = 8Ω, R_g = 50Ω, T_{amb} =25°C

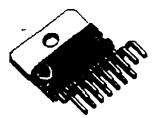
Symbol	Parameter	Test Condition	Min.	Typ.	Max.	Unit
V_S	Supply Voltage Range		11		35	V
I_q	Total Quiescent Current			70	100	mA
DCV_{OS}	Output DC Offset Referred to SVR Potential	No Input Signal	-650		650	mV
V_o	Quiescent Output Voltage			10		V
P_o	Output Power	THD = 10%; R_L = 8Ω; V_S = 28V	9.5	11		W
		THD = 1%; R_L = 8Ω; V_S = 28V	7.5	8		W
		THD = 10%; R_L = 4Ω; V_{CC} = 20V	7	8		W
		THD = 1%; R_L = 4Ω; V_{CC} = 20V	5	6		W
		THD = 10%; R_L = 8Ω; V_{CC} = 18V	3.5	3.8		W
		THD = 1%; R_L = 8Ω; V_{CC} = 18V	2.6	2.9		W

ELECTRICAL CHARACTERISTICS (continued)

Symbol	Parameter	Test Condition	Min.	Typ.	Max.	Unit
THD	Total Harmonic Distortion	Gv=30dB; Po=1W; f=1KHz			0.4	%
Ipeak	Output Peak Current	(internally limited)	1.7	2.4		A
Vin	Input Signal				2.8	Vrms
Gv	Closed Loop Gain	Vol Ctrl > 4.5V	28.5	30	31.5	dB
GvLine	Monitor Out Gain	Vol Ctrl > 4.5V; Zload > 30KΩ	-1.5	0	1.5	dB
A_{Min} Vol	Attenuation at Minimum Volume	Vol Ctrl < 0.5V	80			dB
BW				0.6		MHz
e_N	Total Output Noise	f=20Hz to 22KHz Play, max volume		500	800	µV
		f=20Hz to 22KHz Play, max attenuation		100	250	µV
		f=20Hz to 22KHz Mute		60	150	µV
SR	Slew Rate		5	8		V/µs
Ri	Input Resistance		22.5	30		KΩ
$R_{Var\ Out}$	Variable Output Resistance			30	100	Ω
$R_{load\ Var\ Out}$	Variable Output Load		2			KΩ
SVR	Supply Voltage Rejection	f=1kHz; max volume C_{SVR}=470µF; V_{RIP}=1Vrms	35	39		dB
		f=1kHz; max attenuation C_{SVR}=470µF; V_{RIP}=1Vrms	55	65		dB
T_M	Thermal Muting			150		°C
T_S	Thermal Shut-down			160		°C
MUTE STAND-BY & INPUT SELECTION FUNCTIONS						
V_{ST-BY}	Stand-by threshold		2.3	2.5	2.7	V
V_{MUTE}	Mute threshold		2.3	2.5	2.7	V
I_{qST-BY}	Quiescent Curren @ Stand-by			0.6	1	mA
A_{MUTE}	Mute Attenuation		50	65		dB
$I_{stbyBIAS}$	Stand-by bias current	Stand-by on V_{ST-BY}=5V V_{MUTE}=5V		80		µA µA
		Play or Mute	-20	-5		µA
$I_{muteBIAS}$	Mute bias current	Mute		1	5	µA
		Play		0.2	2	µA

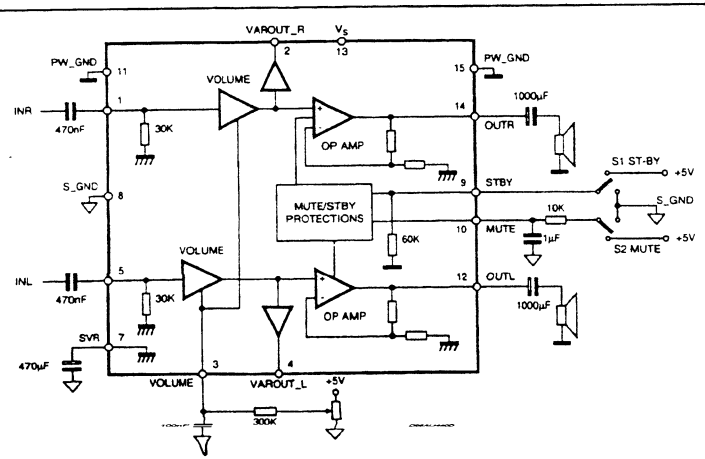
TDA7496
5+5W Amplifier With DC Volume Control

- 5+5W Output Power
- RL = 8Ω @THD = 10% VCC = 22V
- ST-BY and mute functions
- Low tur-on turn-off pop noise
- Linear volume control DC coupled
- With Power Op. Amp.
- No Boucherot Cell
- No ST-BY RC input network
- Single supply ranging up to 35V
- Short circuit protection
- Thermal Overload protection
- Internally fixed gain
- Soft Clipping
- Variable output after volume control circuit
- Multiwatt 15 package



Multiwatt 15
ORDERING NUMBER: TDA7495

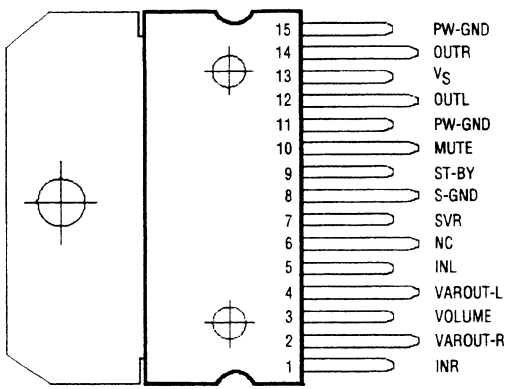
Block and Application Diagram



ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter	Value	Unit
V_S	DC Supply Voltage	35	V
V_{IN}	Maximum Input Voltage	8	Vpp
P_{tot}	Total Power Dissipation (Tamb = 80 °C)	15	W
Tamb	Ambient Operating Temperature	0 to 70	°C
Tstg, Tj	Storage and Junction Temperature	-40 to 150	°C
V_3	Volume CTRL DC voltage	7	V

PIN CONNECTION (Top view)



THERMAL DATA

Symbol	Parameter		Value	Unit
Rth j-case	Thermal Resistance Junction - case		Typ. = 4 Max. = 4.6	°C/W
Rth j-amb	Thermal Resistance Junction - ambient	max.	35	°C/W

ELECTRICAL CHARACTERISTICS (Refer to the test circuit V_S = 22V R_L = 8Ω, R_g = 50Ω, T_{amb} =25

Symbol	Parameter	Test Condition	Min.	Typ.	Max.	Unit
V_S	Supply Voltage Range		11		35	V
I_q	Total Quiescent Current			25	70	mA
DCV_{OS}	Output DC Offset Referred to SVR Potenial	No Input Signal	-650		650	mV
V_o	Quiescent Output Voltage			10		V
P_o	Output Power	THD = 10%; R_L = 8Ω;	5	5.3		W
		THD = 1%; R_L = 8Ω;		4		W
		THD = 10%; R_L = 4Ω; V_{CC} = 12V		2.1		W
		THD = 1%; R_L = 4Ω; V_{CC} = 12V		1.0		W
THD	Total Harmonic Distortion	Gv = 30dB; Po=1W; f=1KHz			0.4	%
I_{peak}	Output Peak Current	(internally limited)	1	1.3		A
V_{in}	Input Signal				2.8	Vrms
Gv	Closed Loop Gain	Vol Ctrl > 4.5V	28.5	30	31.5	dB

ELECTRICAL CHARACTERISTICS (continued)

Symbol	Parameter	Test Condition	Min.	Typ.	Max.	Unit
GvLine	Monitor Out Gain	Vol Ctrl > 4.5V; Zload > 30KΩ	-1.5	0	1.5	dB
AMin Vol	Attenuation at Minimum Volume	Vol Ctrl < 0.5V	80			dB
BW				0.6		MHz
e_N	Total Output Noise	f=20Hz to 22KHz Play, max volume		500	800	µV
		f=20Hz to 22KHz Play, max attenuation		100	250	µV
		f=20Hz to 22KHz Mute		60	150	µV
SR	Slew Rate		5	8		V/µs
Ri	Input Resistance		22.5	30		KΩ
RVar Out	Variable Output Resistance			30	100	Ω
Rload Var Out	Variable Output Load		2			KΩ
SVR	Supply Voltage Rejection	f=1kHz; max volume CSVR=470µF; VRIP=1Vms	35	39		dB
		f=1kHz; max attenuation CSVR=470µF; VRIP=1Vms	55	65		dB
TM	Thermal Muting			150		°C
TS	Thermal Shut-down			160		°C
MUTE STAND-BY & INPUT SELECTION FUNCTIONS						
VST-BY	Stand-by threshold		2.3	2.5	2.7	V
VMUTE	Mute threshold		2.3	2.5	2.7	V
IqST-BY	Quiescent Curren @ Stand-by			0.6	1	mA
AMUTE	Mute Attenuation		50	65		dB
IstbyBIAS	Stand-by bias current	Stand-by on VST-BY=5V VMUTE=5V		80		µA µA
		Play or Mute	-20	-5		µA
ImuteBIAS	Mute bias current	Mute		1	5	µA
		Play		0.2	2	µA

APPLICATION SUGGESTIONS

The recommended values of the external components are those shown on the application circuit of figure 1a. Different values can be used, the following table can help the designer.

COMPONENT	SUGGESTION VALUE	PURPOSE	LARGER SUGGESTION	SMALLER THAN SUGGESTION
R1	300K	Volume control circuit	Larger volume regulation time	Smaller volume regulation time
R2	10K	Mute time constant	Larger mute or/off time	Smaller mute on/off time
P1	50K	Volume control circuit		
C1	1000µF	Supply voltage bypass		Darger of Oscillation
C2	470nF	Input DC decoupling	Lower low frequency cutoff	Higher low frequency cutoff
C3	470nF	Input DC decoupling	Lower low frequency cutoff	Higher low frequency cutoff
C4	470µF	Ripple rejection	Better SVR	Worse SVR
C5	100nF	Volume control time	Larger volume regulation time	Smaller volume regulation time
C6	1000µF	Output DC decoupling	Lower low frequency cutoff	Higher low frequency cutoff
R7	1µF	Mute time constant	Larger mute or/off time	Smaller mute on/off time
C8	1000µF	Output DC decoupling	Lower low frequency cutoff	Higher low frequency cutoff
C9	100nF	Supply voltage bypass		Danger of oscillation

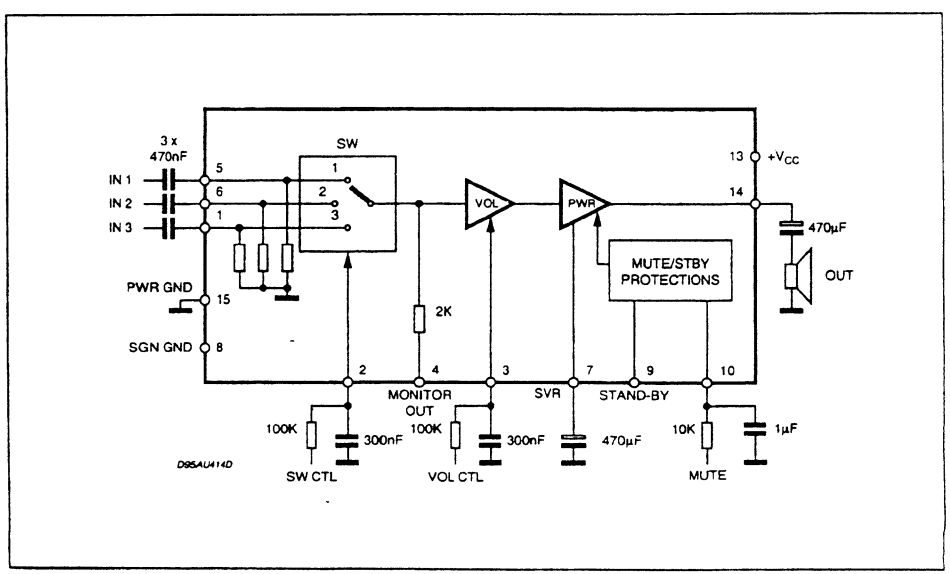
TDA7494

10W Amplifier With DC Volume Control

- 10W Output Power
- RL = □W @THD = 10% VCC = 28V
- ST-BY and mute functions
- With Power Op. Amp.
- No Boucherot Cell
- No ST-BY RC input network
- Signal line output before volume
- Controlling and muting
- 3 switchable voltage controlled
- Input Pins
- Single supply ranging up to 35V
- Short circuit protection
- Thermal Overload protection
- Internally fixed gain
- Soft Clipping
- Low turn-on turn-off pop noise

Multiwatt 15
ORDERING NUMBER: TDA7495

Block and Application Diagram

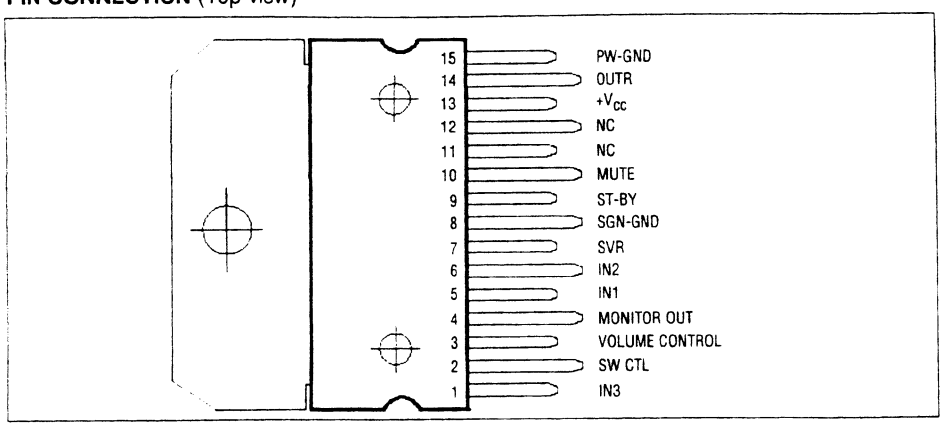


ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter	Value	Unit
V_S	DC Supply Voltage	35	V
V_{IN}	Maximum Input Voltage	8	Vpp
P_{tot}	Total Power Dissipation (Tamb = 70 °C)	16	W
Tamb	Ambient Operating Temperature (1)	-20 to 85	°C
Tstg, Tj	Storage and Junction Temperature	-40 to 150	°C
V2, V_3	Volume CTRL DC voltage	7	V

(1) Operation between -20 to 85 °C guaranteed by correlation with 0 to 70 °C

PIN CONNECTION (Top view)



THERMAL DATA

Symbol	Parameter		Value	Unit
Rth j-case	Thermal Resistance Junction - case		Typ. = 3.8 Max. = 4.8	°C/W
Rth j-amb	Thermal Resistance Junction - ambient	max.	35	°C/W

ELECTRICAL CHARACTERISTICS

(Refer to the test circuit V_S = 21V R_L = 8Ω, R_g = 50Ω, T_{amb} =25°C; unless otherwise specified.)

Symbol	Parameter	Test Condition	Min.	Typ.	Max.	Unit
V_S	Supply Voltage Range		11		35	V
I_q	Total Quiescent Current			22	50	mA
DCV_{OS}	Output DC Offset Referred to SVR Potential	No Input Signal	-400		400	mV
V_o	Quiescent Output Voltage	Vs = 28V		14		V
P_o	Output Power	THD = 10%; R_L = 8Ω; V_{CC} = 28V	8	10		W
		THD = 1%; V_{CC} = 28V	6	8		W
		THD = 10%; V_{CC} = 21V	5	5.5		W
		THD = 1%; V_{CC} = 21V	3.5	4		W
		THD = 10%; R_L = 4Ω; V_{CC} = 21V	5	7.5		W
		THD = 1%; V_{CC} = 21V	3.9	5.5		W
		THD = 10%; V_{CC} = 18V	4.5	6		W
		THD = 1%; V_{CC} = 18V	3.5	4.5		W
		THD = 10%; R_L = 8Ω; V_{CC} = 18V	3.5	3.75		W
		THD = 1%; V_{CC} = 18V	2.5	2.85		W

ELECTRICAL CHARACTERISTICS (continued)

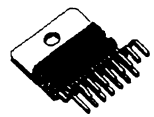
Symbol	Parameter	Test Condition	Min.	Typ.	Max.	Unit
THD	Total Harmonic Distortion	Gv=26dB; Po=1W; f=1KHz			0.4	%
Ipeak	Output Peak Current	(internally limited)	1.4	1.9		A
Top	Operating Temperature		0		70	°C
Vin	Input Signal				2.8	Vrms
Gv	Closed Loop Gain	Vol Ctrl > 4.5V	24.5	26	27.5	dB
GvLine	Monitor Out Gain	$R_{LOAD\ Mon}$ = ∞	-3	-1.5	0	dB
$A_{Min\ Vol}$	Attenuation at Minimum Volume	Vol Ctrl < 0.5V	80			dB
BW				0.6		MHz
e_N	Total Output Noise	f=20Hz to 22KHz Play, max volume		350	700	µV
		f=20Hz to 22KHz Play, max attenuation		60	100	µV
		f=20Hz to 22KHz Mute		30	50	µV
SR	Slew Rate		5	8		V/µs
Ri	Input Resistance		22.5	30		KΩ
R_{Mon}	Monitor Output Resistance		1.4	2	3	KΩ
$R_{load\ Mon}$	Monitor Output Load		30			KΩ
SVR	Supply Voltage Rejection	f=1kHz; max volume C_{SVR}=470µA; V_{RIP}=1Vrms	36	43		dB
		f=1kHz; max attenuation C_{SVR}=470µA; V_{RIP}=1Vrms	60	73		dB
T_M	Thermal Muting			150		°C
Ts	Thermal Shut-down			160		°C
V_{ST-BY}	Stand-by threshold		2.3	2.5	2.7	V
V_{MUTE}	Mute threshold		2.3	2.5	2.7	V
Sel #1	Control Voltage	input#1 selected	0		1	V
Sel #2	Control Voltage	input#2 selected	2.3		2.7	V
Sel #3	Control Voltage	input#3 selected	4		5	V
I_{qST-BY}	Quiescent Curren @ Stand-by			0.6	1	mA
A_{MUTE}	Mute Attenuation		60	75		dB
$I_{stbyBIAS}$	Stand-by bias current	Stand-by on V_{ST-BY}=5V V_{MUTE}=5V		80	150	µA
		Play or Mute		2	20	µA
$I_{muteBIAS}$	Mute bias current	Mute		1.5	5	µA
		Play		0.2	10	µA
$I_{switchBIAS}$	Switch bias current	input#1 selected		-0.5	5	µA
		input#2 selected		1	10	µA
		input#3 selected		1.5	20	µA

STV5112
RGB High Voltage Video Amplifier

DESCRIPTION

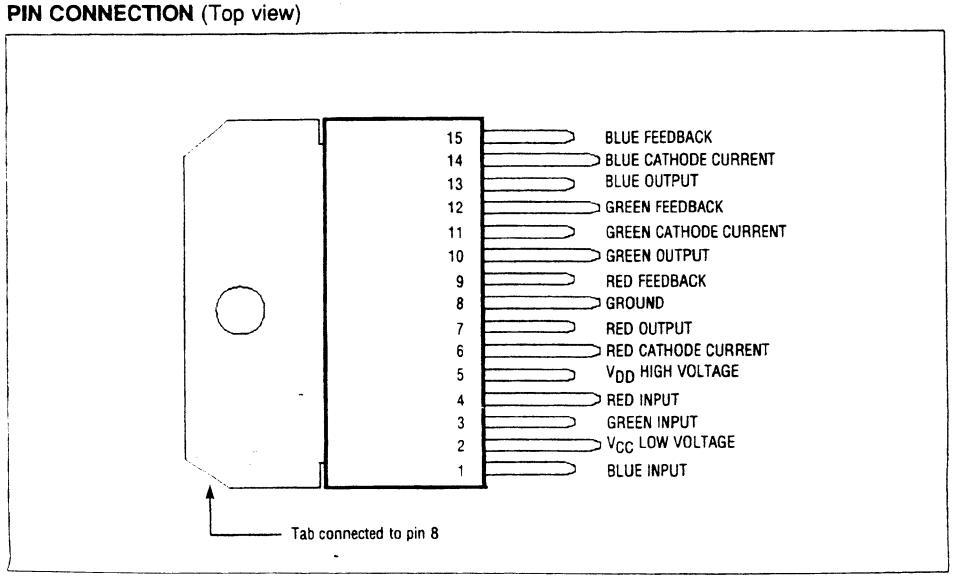
The STV5112 includes three video amplifiers designed with a high voltage bipolar / CMOS / DMOS technology (BCD). It drives directly the three cathodes and is protected against flashovers. Thanks to its three cathode current outputs, the STV5112 can be used with both parallel and sequential samplingapplications.

- BANDWIDTH : 8MHz TYPICAL
- SUPPLY VOLTAGE : 220V TYPICAL
- RISE AND FALL TIME : 50ns TYPICAL
- CRT CATHODE CURRENT OUTPUTS FOR PARALLEL OR SEQUENTIAL CUT-OFF OR DRIVE ADJUSTMENT
- FLASHOVER PROTECTION
- POWER DISSIPATION : 3.6W



Multiwatt 15
ORDERING NUMBER: TDA7495

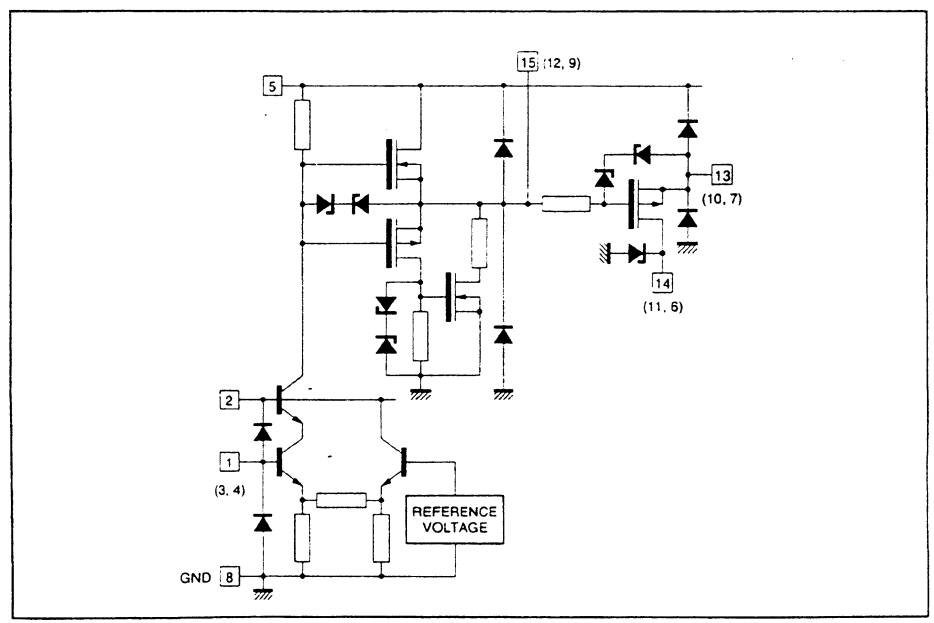
PIN CONNECTION (Top view)



PIN FUNCTION

N°	Function	Description
1	Blue Input	Input of the "blue" amplifier. It is a virtual ground with 2.5V bias voltage and 75µA input bias current.
2	VCC	Low voltage power supply, typically 9V.
3	Green Input	Input of the "green" amplifier. It is a virtual ground with 2.5V bias voltageb and 75µA input bias current.
4	Red Input	Input of the "red" amplifier. It is a virtual ground with 2.5V bias voltageb and 75µA input bias current.
5	V_{DD}	High voltage power Supply, typically 220V.
6	Red Cathode Current	Provides the video processor with a copy of the DC current flowing into the red cathode, for automatic cut-off or gain adjustment. If this control is not used. Pin 6 must be grounded.
7	Red Output	Output driving the red cathode. Pin 7 is internally protected against CRT arc discharges by a diode limiting the output voltage V_{DD}.
8	Ground	Also connected to the heatsink.
9	Red Feedback	Output driving the feedback resistor network for the red amplifier
10	Green Output	Output driving the greeen cathode. Pin 10 is internally protected against CRT arc discharges by a diode limiting the output voltage V_{DD}.
11	Green Cathode Current	Provides the video processor with a copy of the DC current flowing into the green cathode, for automatic cut-off or gain adjustment. If this control is not used. Pin 11 must be grounded.
12	Green Feedback	Output driving the feedback resistor network for the green amplifier
13	Blue Output	Output driving the blue cathode. Pin 13 is internally protected against CRT arc discharges by a diode limiting the output voltage V_{DD}.
14	Blue Cathode Current	Provides the video processor with a copy of the DC current flowing into the blue cathode, for automatic cut-off or gain adjustment. If this control is not used. Pin 14 must be grounded.
15	Blue Feedback	Output driving the feedback resistor network for the blue amplifier.

BLOCK DIAGRAM OF EACH CHANNEL



ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter		Value	Unit
V_{DD}	Supply High Voltage	Pin 5	250	V
V_{CC}	Supply Low Voltage	Pin 2	20	V
I_{OD}	Output Current to V_{DD}	Pins 7-10-13	Protected	
I_{OG}	to Ground		8	mA
I_{FD}	Output Current < 50µs duration to V_{DD}	Pins 9-12-15	45	mA
I_{FG}	to Ground		45	mA
I_i	Input Current	Pins 1-3-4	60	mA
T_j	Junction Temperature		150	°C
T_{oper}	Operating AmbientTemperature		0, +70	°C
T_{stg}	Storage Temperature		-20, +150	°C

THERMAL DATA

Symbol	Parameter		Value	Unit
Rth j-case	Thermal Resistance Junction - case	max.	3	°C/W
Rth j-amb	Thermal Resistance Junction - ambient	Typ.	35	°C/W

ELECTRICAL CHARACTERISTICS (V_{CC}= 9V; V_{DD} = 240V; T_{amb} =25°C; AV = 55unless otherwise specified.)

Symbol	Parameter	Test Condition	Min.	Typ.	Max.	Unit
V_{DD}	High Supply Voltage (Pin5)			220	240	V
V_{CC}	Low Supply Voltage (Pin2)		7.5	9	10	V
I_{DD}	High Voltage Supply internal DC current (without current due to the feedbacck network)	VOUT = 120V		9.5	15	mA
I_{CC}	Low Voltage Supply internal DC current			38	55	mA
V_{sath}	Output Saturation Voltage (High level) (Pins 7-10-13)	Io = 10µA		5		V
R_{ON}	Output Mos Transistor (Low level) (Pins 7-10-13)			1.7		kΩ
BW	Bandwith at -3dB	Measured on CRT cathodes (C_{LOAD} = 10pF; $R_{PROTECT}$ = 1kΩ, V_{OUT} = 120V, Δ V_{OUT} = 100V_{pp})		8		MHz
tR, tF	Rise & Fall Time	Measured between 10% & 90% of output pulse (C_{LOAD} = 10pF; $R_{PROTECT}$ = 1kΩ, V_{OUT} = 120V, Δ V_{OUT} = 100V_{pp})		50		ns
G_O	Open Loop Gain		47	50		dB
	Open Loop Gain Difference between 2 channels		-1.5	0	1.5	dB
	Open Loop Gain Temperature Coefficient			0		dB/°C
P	Internal Power Dissipation (see calculation below)	VOUT = 2MHz, 70 V_{PP} sine wave. V_{BLACK} = 170V, C_L = 20pF R_F= 68kΩ		3.6		W
V_{REF}	Internal Voltage Reference (Pins 1,3,4)	VOUT = 120V	2.3	2.5	2.7	V
	Voltage Reference Temperature Coefficient			0		mV/°C
I_{IB}	Input Bias Current (Pins 1,3,4)	VOUT = 120V		75		µA
R_I	Input Resistance			4		kΩ
ESD	ESD Human Body Model		1.2			kV

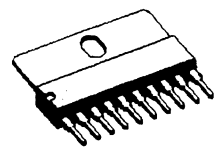
TDA1771
Vertical Deflection Circuit

DESCRIPTION

The TDA1771 is a monolithic integrated circuit in SIP10package.

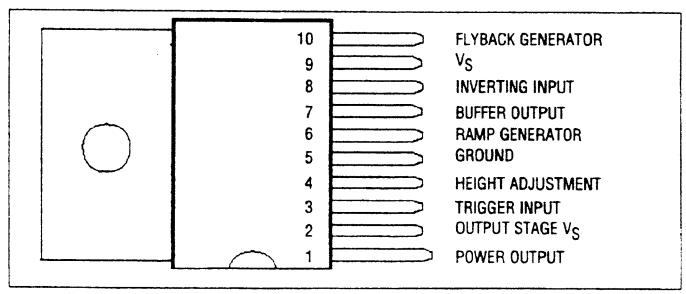
It is a full performance and very efficent vertical deflection circuit intended for direct drive of a TV picture tube in Color and B & W television as well as in Monitor and Data displays.

- RAMP GENERATOR
- INDEPENDENT AMPLITUDE ADJUSTMENT
- BUFFER STAGE
- POWER AMPLIFIER
- FLYBACK GENERATOR
- INTERNAL REFERENCE VOLTAGE
- THERMAL PROTECTION

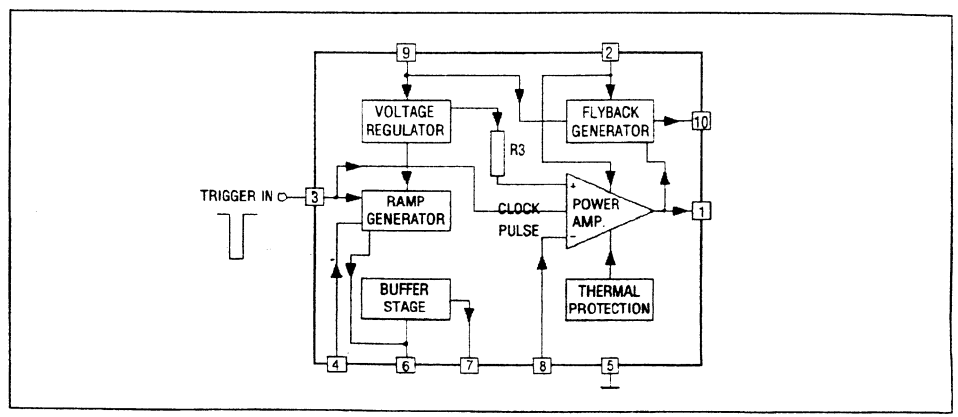


SIP10
(Plastic Package)

PIN CONNECTION (Top view)



BLOCK DIAGRAM



ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter	Value	Unit
V_{DD}	Supply Voltage	30	V
V_1, V_2	Flyback Peak Voltage	65	V
V_3	Trigger Input Voltage	20	V
V_8	Amplifier Input Voltage	GND to Vs	V
I_O	Output Peak to Peak Current (non repetitive t= 2ms)	6	A
I_O	Output Peak to Peak Current > 10µs	4	A
I_{10}	Pin 10 DC Current at $V_1 > V_9$	100	mA
I_{10}	Pin 10 Peak to Peak Current @ $T_{fly} < 1.5ms$	3	A
P_{tot}	Total Power Dissipation @ $T_{tab} = 60°C$	9	W
T_s, T_j	Storage and Junction Temperature	-40, +150	°C

THERMAL DATA

Symbol	Parameter		Value	Unit
Rth j-tab	Thermal Resistance Junction - tab	max.	10	°C/W
Rth j-a	Thermal Resistance Junction - ambient	Typ.	70	°C/W

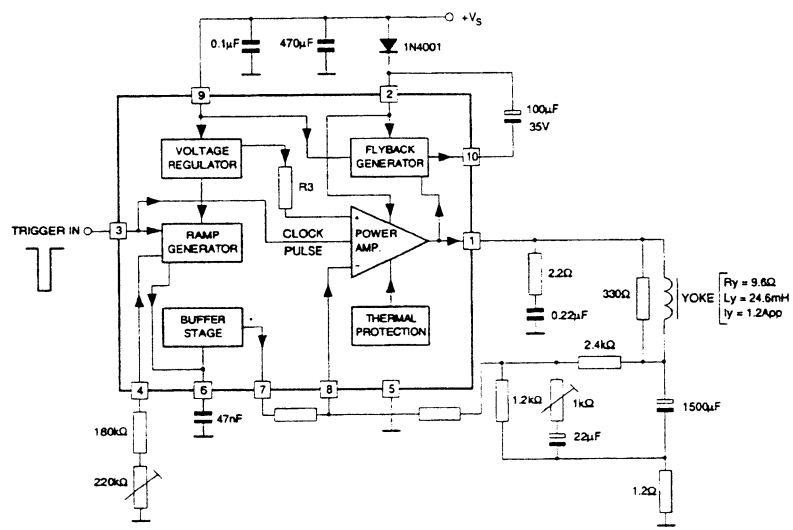
ELECTRICAL CHARACTERISTICS (T_{amb} =25°C; unless otherwise specified.)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
DC (Vs = 30V)						
I_2	Pin 2 Quiescent Current	$I_1 = 0, I_{10} = 0$		16	36	mA
I_9	Pin 9 Quiescent Current	$I_1 = 0, I_{10} = 0$		15	30	mA
$-I_6$	Ramp Generator Bias Current	$V_6 = 0$			0.5	µA
$-I_6$	Ramp Generator Current	$V_6 = 0; -I_4 = 20µA$	18.5	20	21.5	µA
dI_6/I_6	Ramp Generator Linearity	$V_6 = 0$ to 15V; $-I_4 = 20µA$		0.2	1	%
V_1	Quiescent Output Voltage	$R_a = 30k\Omega, R_b = 10k\Omega, V_S = 30V$	17.0	17.8	18.6	V
		$R_a = 6.8k\Omega, R_b = 10k\Omega, V_S = 15V$	7.2	7.5	7.8	V
V_{1L}	Output Saturation Voltage to GND	$I_1 = 0.5A$		0.5	1	V
		$I_1 = 1.2A$		1	1.4	V
V_{1H}	Output Saturation Voltage to V_S	$-I_1 = 0.5A$		1.1	1.6	V
		$-I_1 = 1.2A$		1.6	2.2	V
V_4	Reference Voltage	$-I_4 = 20µA$	6.3	6.6	6.9	V
dV_4/V_S	Reference Voltage Drift Versus V_S	$V_S = 10V$ to 30V		1	2	mV/V
dV_4/D_{I4}	Reference Voltage Drift Versus I_4	$I_4 = 10µA$ to 30µA		1.5	2	mV/µA
V_r	Internal Reference Voltage		4.26	4.40	4.54	V
G_V	Output Stage Open Loop Gain	f = 100Hz		60		dB
V_{fs}	V_{9-10} Saturation Voltage	$-I_{10} = 1.2A$		1.5	2.5	V
V_{10}	Pin 10 Scanning Voltage	$I_{10} = 20mA$		1.7	3	V
V_3	Trigger Input Threshold	(see note 1)	2.6	3.0	3.4	V
I_3	Trigger Input Bias Current	$V_{IN} = V_3 - 0.2V$			30	µA
t_3	Trigger Input Width	(see note 2)	20	60	th	µS

ELECTRICAL CHARACTERISTICS (T_{amb} =25°C; unless otherwise specified.) (continued)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
DC (Vs = 24V)						
V_S	Operating Supply Voltage Range		10		30	V
I_1	Peak to Peak Operating Current Range		0.4		2.5	A
I_S	Supply Current	$I_Y = 2.4App$		315		mA
V_1	Flyback Voltage	$I_Y = 2.4App$		51		V
V_7	Sawtooh Pedestall Voltage			1.85		V
T_{JS}	Junction Temp. for Thermal Shutdown			145		°C

APPLICATION CIRCUIT



STV9306

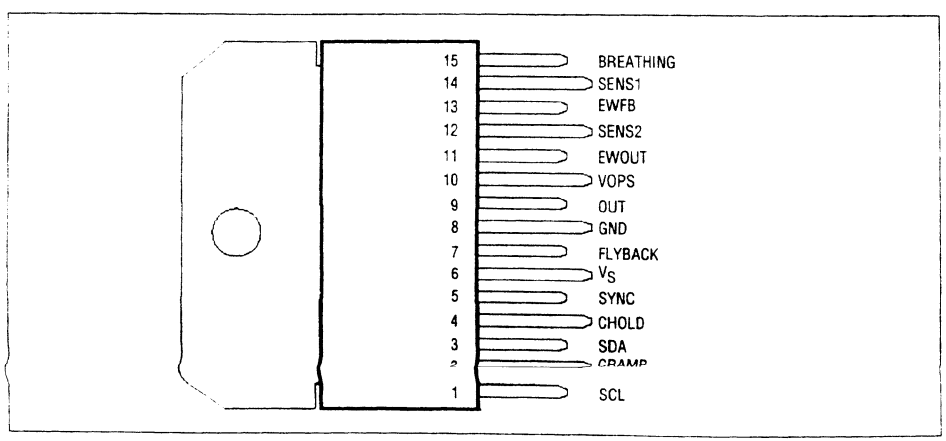
Bus controlled Vertical Deflection System With East/West Correction Output Circuit

DESCRIPTION

The STV9306 is a fully I²C controlled vertical deflection IC designed for use in 110°, 4/3 or 16/9 CRT applications. It integrates both the vertical deflection and E/W correction circuitries necessary in design of a 110° chassis.

- FULLY I2C CONTROLLED
- DMOSPOWER HALF-BRIDGE AMPLIFIER
- DC COUPLED OPERATION
- INTERNAL FLYBACK GENERATOR (UP TO 60V)
- SELF ADAPTED SAWTOOTH (50/60Hz)
- 100 Hz OPERATION
- VERTICAL LINEARITY, AMPLITUDE AND CENTERING ADJUSTMENTS
- HORIZONTAL WIDTH, PINCUSHION, TRAPEZOID AND CORNER ADJUSTMENTS
- BREATHING CORRECTION
- 4/3, 16/9 CRT APPLICATION
- THERMAL PROTECTION
- LINEAR VERTICAL ZOOM FUNCTION
- E/W CLASS AOUTPUT
- LOW EXTERNAL COMPONENTS

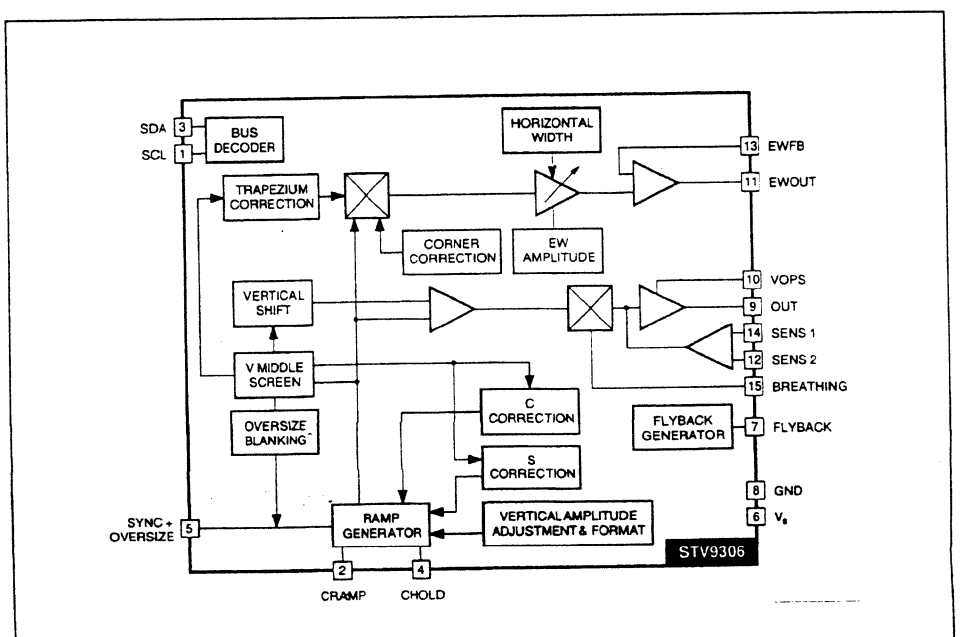
PIN CONNECTION (Top view)



PIN LIST

Pin	Symbol	
1	SCL	[illegible]
2	CRAMP	Ramp [illegible]
3	SDA	I²C Bus [illegible]
4	CHOLD	Hold Capacitor [illegible]
5	SYNC	Sync Input [illegible]
6	Vs	Supply Voltage
7	FLYBACK	Flyback Output
8	GND	Ground
9	OUT	Vertical Output
10	VOPS	Vertical Output Power Supply
11	EWOUT	EW Output [illegible]
12	SENS2	Vertical Current Sense 2
13	EWFB	EW Feedback [illegible]
14	SENS1	Vertical Current Sense 1
15	BREATHING	Breathing Input [illegible]

BLOCK DIAGRAM



ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter	Value	Unit
V_S	Supply Voltage	35	V
V_{OUT}	Flyback Peak Voltage	60	V
V_I	Input Voltage AT PINS 1,3,5,12,13,14,15	-0.3, Vs	V
V_{IS}	Input Voltage AT PINS 2,4	10	V
E/W OUT	East / West Output	60	V
T_{oper}	Operating Temperature	-10, +70	°C
T_{stg}	Storage Temperature	-55, +150	°C
T_j	Junction Temperature	+150	°C

THERMAL DATA

Symbol	Parameter		Value	Unit
Rth j-c	Thermal Resistance Junction - case	max.	3	°C/W
Tt	Temperature for Thermal Shutdown	Min.	140	°C

TDA16846

Controller for Switch Mode Power Supplies Supporting Low Power Standby and Power Factor Correction

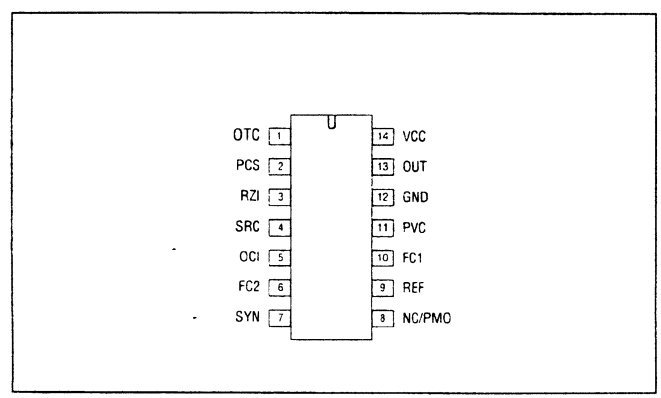
FEATURES

- Line Current Consumption with PFC
- Low Power Consumption
- Stable and Adjustable Standby Frequency
- Very Low Start-up Current
- Soft-Start for Quiet Start-up
- Free usable Fault Comparators
- Synchronization and Fixed Frequency Facility
- Over- and Undervoltage Lockout
- Switch Off at Mains Undervoltage
- Temporary high power circuit (only TDA 16847)
- Mains Voltage Dependent Fold Back Point Correction
- Continuous Frequency Reduction with Decreasing Load
- Adjustable and Voltage Dependent Ringing Suppression Time

DESCRIPTION

The TDA 16846 is optimized to control free running or fixed frequency flyback converters with or without Power Factor Correction (Current Pump). To provide low power consumption at light loads, this device reduces the switching frequency continuously with load, towards an adjustable minimum (e. g. 20 kHz in standby mode). Additionally, the start up current is very low. To avoid switching stresses of the power devices, the power transistor is always switched on at minimum voltage. A special circuit is implemented to avoid jitter. The device has several protection functions: VCC over- and underwoltage, mains undervoltage, current limiting and 2 free usable fault comparators. Regulation can be done by using the internal error amplifier or an opto coupler feedback (additional input). The output driver is ideally suited for driving a power MOSFET, but it can also be used for a bipolar transistor. Fixed frequency and synchronized operation are also possible. The TDA16846 is suited for TV-, VCR- sets and SAT receivers. It also can be good used in PC monitors. The TDA16847 is identical with TDA16846 but has an additional power measurement output (pin 8) which can be used for a Temporary High Power Circuit.

Pin description



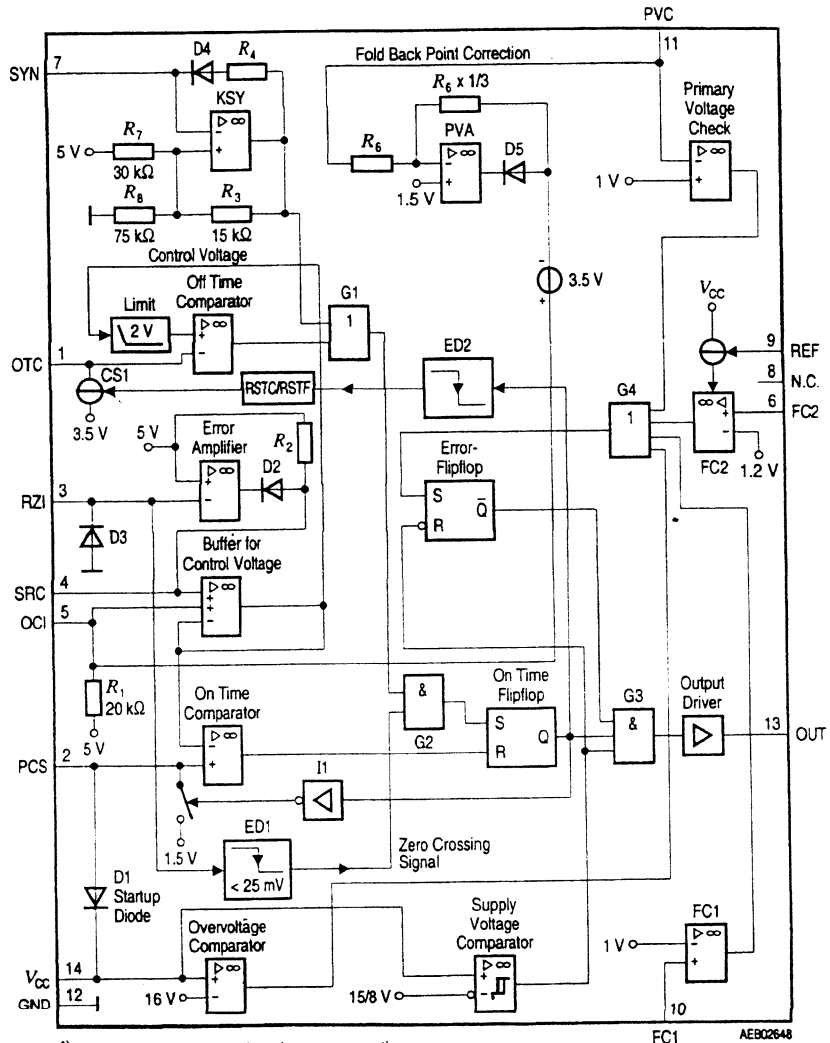
PIN DEFINITIONS AND FUNCTIONS

Pin	Symbol	Function
1	OTC	Off Time Circuit
2	PCS	Primary Current Simulation
3	RZI	Regulation and Zero Crossing Input
4	SRC	Soft-Start and Regulation Capacitor
5	OCI	Opto Coupler Input
6	FC2	Fault Comparator 2
7	SYN	Synchronization Input
8	NC/PMO	Not Connected (TDA16846)/PMO (TDA16847
9	REF	Reference Voltage and Current
10	FC2	Fault Comparator 1
11	PVC	Primary Voltage Check
12	GND	Ground
13	OUT	Output
14	VCC	Supply Voltage

SHORT DESCRIPTION OF THE PIN FUNCTIONS

N°	Function	Description
1	OTC	A parallel RC-circuit between this pin and ground determines the ringing suppression time and the standby-frequency.
2	PCS	A capacitor between this pin and ground and a resistor between this pin and the positive terminal of the primary elcap quantifies the max. possible output power of the SMPS.
3	RZI	This is the input of the error amplifier and the zero crossing input. The output of a voltage divider between the control winding and ground is connected to this input. If the pulses at pin 3 exceed a 5V threshold, the control voltage at pin 4 is lowered.
4	SRC	This is the pin for the control voltage. A capacitor has to be connected between this pin and ground. The value of this capacitor determines the duration of the softstart and the speed of the control.
5	OCI	If an opto coupler for the control is used, it's output has to be connected between this pin and ground. The voltage divider at pin3 has then to be changed, so that the pulses at pin3 are below 5 V.
6	FC2	Fault comparator 2: If a voltage > 1.2 V is applied to this pin, the SMPS stops.
7	SYN	If fixed frequency mode is wanted, a parallel RC circuit has to be connected between this pin and ground. The RC-value determines the frequency. If synchronized mode is wanted, sync pulses have to be fed into this pin.
8	NC/PMO	Not connected (TDA16846). / This is the power measurement output of the Temporary High Power Circuit. A capacitor and a RC-circuit has to be connected between this pin and ground (TDA16847).
9	REF	Output for reference voltage (5 V). With a resistor between this pin and ground the fault comparator 2 (pin 6) is enabled.
10	FC2	Fault comparator 1: If a voltage > 1. V is applied to this pin, the SMPS stops.
11	PVC	This is the input of the primary voltage check. The voltage at the anode of the primary elcap has to be fed to this pin via a voltage divider. If the voltage of this pin falls below 1 V, the SMPS is switched off. A second function of this pin is the primary voltage dependent fold back point correction (only active in free running mode).
12	GND	Common ground.
13	OUT	Output signal. This pin has to be connected across a serial resistor with the gate of the power transistor.
14	VCC	Connection for supply voltage and startup capacitor. After startup the supply voltage is produced by the control winding of the transformer and rectified by an external diode.

BLOCK DIAGRAM



1) The input with the lower voltage becomes operative

CDT1100(G) Series

Optocoupler with Phototransistor Output

DESCRIPTION

The TCDT1100(G) series consists of a phototransistor optically coupled to a gallium arsenide infrared-emitting diode in a 6-lead plastic dual inline package. The elements are mounted on one leadframe using a coplanar technique, providing a fixed distance between input and output for highest safety requirements.

APPLICATIONS

Circuits for safe protective separation against electrical shock according to safety class II(reinforced isolation):

- For application class I - IV at mains voltage 3 300V
- For application class I - III at mains voltage 3 600V

according to VDE 0884, table 2, suitable for:

Switch-mode power supplies, computer peripheral interface, microprocessor system interface, line receiver.

These couplers perform safety functions according to the following equipment standards:

- VDE0884

Optocoupler providing protective separation

- VDE0804

Telecommunication apparatus and data processing

- VDE0805 / IEC950 / EN60950

Office machines (applied for reinforced isolation for mains voltage 3 400 VRMS)

- VDE0860 / IEC65

Safety for mains-operated electronic and related household apparatus

Input (Emitter)

Parameter	Test Conditions	Symbol	Value	Unit
Reverse Voltage		V_R	5	V
Forward current		I_F	60	mA
Forward surge current		I_{FSM}	3	A
Power dissipation	Tamb = 25°C	P_V	100	mW
Junction Temperature		T_j	125	°C

Output (Detector)

Parameter	Test Conditions	Symbol	Value	Unit
Collector emitter voltage		V_{CEO}	32	V
Emitter Collector voltage		I_C	7	V
Collector current		I_{CM}	50	MA
Collector peak current		I_{CM}	100	MA
Power dissipation	Tamb = 25°C	P_V	100	mW
Junction Temperature		T_j	125	°C

Coupler

Parameter	Test Conditions	Symbol	Value	Unit
Isolation test voltage		V_{IO}	3.75	KV
Total power dissipation	Tamb = 25°C	P_{tot}	250	MW
Ambient temperature range		T_{amb}	-55 to +100	°C
Storage temperature range		T_{stg}	-55 to +125	°C
Soldering Temperature	2mm from case t □ 10 s	T_{sd}	260	°C

MAXIMUM SAFETY RATINGS (according to VDE 0884)

Input (Emitter)

Parameters	Test Conditions	Symbol	Value	Unit
Forward current		I_{Si}	130	mA

MAXIMUM SAFETY RATINGS[1] (according to VDE 0884)

Input (Emitter)

Parameters	Test Conditions	Symbol	Value	Unit
Forward current		I_{Si}	130	mA

Output (Detector)

Parameters	Test Conditions	Symbol	Value	Unit
Power dissipation	Tamb = 25°C	P_{Si}	265	mW

Coupler

Parameters	Test Conditions	Symbol	Value	Unit
Rated impulse voltage		V_{IOTM}	6	kV
Safety temperature		T_{Si}	150	°C

[1] *This device is used for protective separation against electrical shock only within the maximum safety ratings. This must be ensured by using protective circuits in the applications.*

ELECTRICAL CHARACTERISTICS T_{amb} = 25 □ C

Input (Emitter)

Parameters	Test Conditions	Symbol	Min.	Typ.	Max.	Unit
Forward voltage	I_F= 50 mA	V_F		1.25	1.6	V
Breakdown voltage	I_C = 100-A	$V_{(BR)}$	5			V
Junction capacitance	V_R = 0, f = 1 MHz	V_J		50		pF

Output (Detector)

Parameters	Test Conditions	Symbol	Min.	Typ.	Max.	Unit
Collector emitter breakdown voltage	IC = 1 mA	$V_{(BR)CEO}$	32			V
Emitter collector breakdown voltage	IE = 100-A	$V_{(BR)CEO}$	7			V
Collector emitter cut off current	VCE = 20V, IF	I_{CEO}		200		NA

Coupler

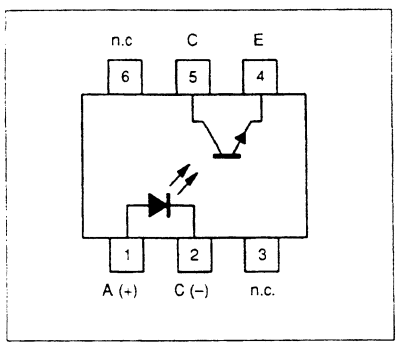
Parameters	Test Conditions	Symbol	Min.	Typ.	Max.	Unit
Ac isolation tes voltage(RMS)	f = 50 Hz, t= 1 s	V_{IO}[2]	3.75			V
Collector / emitter saturation voltage	I_F = 10 mA, I_C = 1 mA	V_{CEsat}			0.3	V
Cut off frequency	V_{CE} = 5V, I_F = 10 mA, R_L = 100	f_c		110		kHz
Coupling capacitance	f = 1 MHz	ck		0.3		pF

[2] *Related to standard climate 23/50 DIN 50014*

Current Transfer Ratio (CTR)

Parameters	Test Conditions	Typ.	Symbol	Min.	Typ.	Max.	Unit
I_C/I_F	V_{CE} = 5V, IF =10 mA	TCDT1100(G)	CTR	0.40			
I_C/I_F	V_{CE} = 5V, IF =10 mA	TCDT1101(G)	CTR	0.40		0.80	
I_C/I_F	V_{CE} = 5V, IF =10 mA	TCDT1102(G)	CTR	0.63		1.25	
I_C/I_F	V_{CE} = 5V, IF =10 mA	TCDT1103(G)	CTR	1.00		2.00	

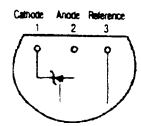
Pin Connection



L431
rogrammable Voltage Reference

- Adjustable output voltage: Vref to 36V
- Sink current capability: 1 to 100 mA
- Typical output impedance: 0.22W
- 1% and 2% voltageprecision

TO92
(Top view)



Z
TO92

DESCRIPTION

The TL431 is a programmable shunt voltage reference with guaranteed temperature stability over the entire temperature range of operation. The outputvoltagemaybe set to any value between Vref (approximately 2.5V) and 36V with two external resistors. The TL431 operates with a wide current range from 1 to 100mA with a typical dynamic impedance of 0.22W

ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter		Value	Unit
V_{KA}	Cathode to Anode Voltage		37	V
I_K	Continuous Cathode Current Range		-100 to +150	mA
I_{ref}	Reference Input Current Range		–0.05 to +10	mA
T_{oper}	Operating Free-airT emperature Range	TL431C/AC	0 to + 70	°C
		TL431I/AI	-40 to +85	
T_{stg}	Storage Temperature Range		-65, +150	°C

OPERATING CONDITIONS

Symbol	Parameter	Value	Unit
V_{KA}	Cathode to Anode Voltage	V_{ref} to 36	V
I_K	Cathode Current	1 to 100	mA

ELECTRICAL CHARACTERISTICS T_{amb} = 25 °C (unless otherwise specified)

Symbol	Parameters	TL431C Min.	TL431C Typ.	TL431C Max.	TL431AC Min.	TL431AC Typ.	TL431AC Max.	Unit
V_{ref}	Reference Input Voltage - (figure 1) $V_{KA} = V_{ref}$, I_K = 10mA T_{amb} = 25°C $T_{min} \le T_{amb} \le T_{max}$	2.44 2.43	2.495	2.55 2.567	2.47 2.453	2.495	2.52 2.537	V
ΔV_{ref}	Reference Input Voltage Deviation Over Temperature Range - (figure 1, note1) $V_{KA} = V_{ref}$, I_K = 10mA, $T_{min} \le T_{amb} \le T_{max}$		3	17		3	15	mV
$\frac{\Delta V_{ref}}{\Delta V_{KA}}$	Ratio of Change in Reference Input Voltage to Change in Cathode to Anode Voltage , (figure 2) I_K = 10mA ΔV_{KA} = 10V to V_{ref} ΔV_{KA} = 36V to 10V		-1.4 -1	-2.7 -2		-1.4 -1	-2.7 -2	mV/V
I_{ref}	Reference Input Current - (figure 2) I_K = 10mA, R_1 = 10kΩ, R_2 = ∞ T_{amb} = 25°C $T_{min} \le T_{amb} \le T_{max}$			5.2			5.2	µA
ΔI_{ref}	Reference Input Current Deviation Over Temperature Range - (figure 2) I_K = 10mA, R_1 = 10kΩ, R_2 = ∞ $T_{min} \le T_{amb} \le T_{max}$		0.4	1.2		0.4	1.2	µA
I_{min}	Minimum Cathode Current for Regulation - (figure 1) $V_{KA} = V_{ref}$		0.5	1		0.5	0.6	mA
I_{off}	Off-State Cathode Current - (figure 3)		2.6	1000		2.6	1000	nA
$\lvert Z_{KA} \rvert$	Dynamic Impedance - (figure 1, note 2) $V_{KA} = V_{ref}$, ΔI_K = 1 to 100 mA, f ≤ 1kHz		0.22	0.5		0.22	0.5	Ω

Notes: 1. ΔV_{ref} *is defined as the difference between the maximum and minimum values obtained over the full temperature range.*

Figure 1: Test Circuit for VKA = Vref

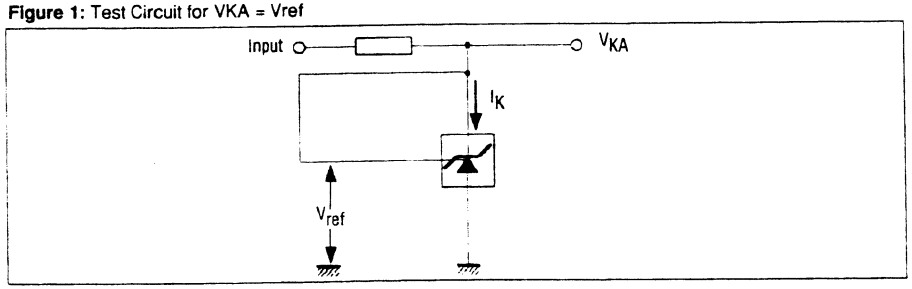
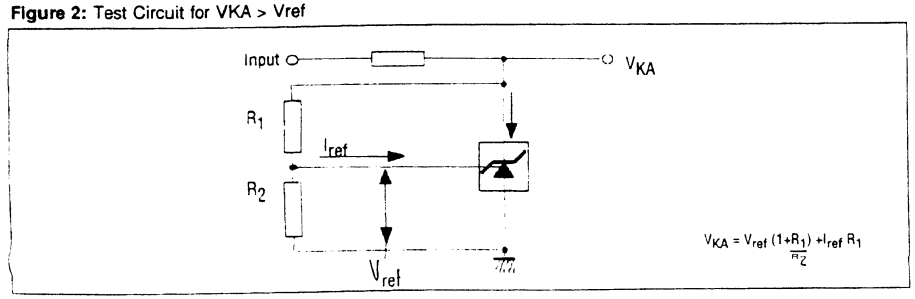
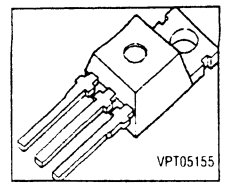


Figure 2: Test Circuit for VKA > Vref

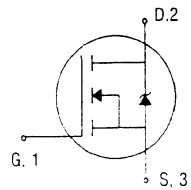


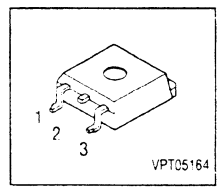
SPP03N60S5 / SPB03N60S5

Cool MOS Power Transistor



- New revolutionary high voltage technology
- Ultra low gate charge
- Periodic avalanche proved
- Extreme dv/dt rated
- Optimized capacitances
- Improved noise immunity
- Former development designation: SPPx4N60S5/SPBx4N60S5





Type	V_{DS}	I_D	$R_{DS(on)}$	Package	Marking	Ordering Code
SPP03N60S5	600V	3.2A	1.4Ω	P-TO220-3-1	03N60S5	Q67040-S4184
SPB03N60S5				P-TO263-3-2	03N60S5	Q67040-S4197

MAXIMUM RATINGS

at T_j = 25 °C; unless otherwise specified

Parameter	Symbol	Value	Unit
Continuous drain current T_C = 25 °C T_C = 100 °C	I_D	 3.2 2	A
Pulsed drain current, tp = 1ms T_C = 25 °C	$I_{D\,puls}$	5.7	
Avalanche energy, single pulse I_D =3.2A, V_{DD} = 50V, R_{GS} = 25Ω Periodic avalanche energy E_{AR} only limited by T_{jmax}	E_{AS}	100	mJ
Reverse diode d_v/d_t IS = 3.2 A, V_{DS}<V_{DSS}, d_i/d_t = 100 A/µs. T_{jmax} = 150 °C	d_v/d_t	6	kV/µs
Gate source voltage	V_{GS}	±20	V
Power dissipation T_C = 25 °C	P_{tot}	38	°C
Operating and storage temperature	T_j, T_{stg}	-55 ...+150	°C

ELECTRICAL CHARACTERISTICS

Parameter at T_j = 25 °C; unless otherwise specified	Symbol	Value			Unit
		min.	typ.	max.	

Thermal Characteristics

Thermal resistance, junction - case	R_{thJC}	-	-	3.3	K/W
Thermal resistance, junction - ambient (Leaded and through-hole packages)	R_{thJA}	-	-	62	
SMD version, device on PCB @ min. footprint @ 6 cm² cooling area [2]	RthJA	- -	- 35	62 -	

Static Characteristics

Drain-source breakdown voltage V_{GS} = 0V, I_D = 0.25 mA	$V_{(BR)DSS}$	600	-	-	V
Gate threshold voltage, $V_{GS} = V_{DS}$ I_D = 135 µA, T_j = 25 °C	$V_{GS(th)}$	3.5	4.5	5.5	
Zero gate voltage drain current, $V_{DS} = V_{DSS}$ V_{GS} = 0V, T_j = 25 °C V_{GS} = 0V, T_j = 150 °C	I_{DSS}	- -	0.5 -	1 70	µA
Gate-source leakage current V_{GS} = 20V, V_{DS} = 0V	I_{GSS}	-	-	100	nA
Drain Source on-state resistance V_{GS} = 10V, I_D = 2A	$R_{DS(on)}$	-	1.26	1.4	Ω

[1] current limited by T_{jmax}

[2] Device on 50mm*50mm*1.5mm epoxy PCB FR4 with 6 cm2 (one layer, 70µm thick) copper area for drain connection. PCB is vertical without blown air.

ELECTRICAL CHARACTERISTICS

Parameter at T_j = 25 °C; unless otherwise specified	Symbol	Value			Unit
		min.	typ.	max.	

Characteristics

Transconductance V_{DS} = 25V, $R_{DS(on)max}$, I_D = 2.2 A	g_{fs}	-	1.8	-	S
Input capacitance V_{GS} = 0V, V_{DS} = 25V, f = 1MHz	C_{iss}	-	440	-	pF
Output capacitance V_{GS} = 0V, V_{DS} = 25V, f = 1MHz	C_{oss}	-	230	-	
Reverse transfer capacitance V_{GS} = 0V, V_{DS} = 25V, f = 1MHz	C_{rss}	-	12	-	
Turn-on delay time V_{DD} = 350V, V_{GS} = 10V, I_D = 3.2 A, R_G = 20 Ω	$t_{d(on)}$	-	40	-	ns
Rise time V_{DD} = 350V, V_{GS} = 10V, I_D = 3.2 A, R_G = 20 Ω	t_r	-	30	-	
Turn-off delay time V_{DD} = 350V, V_{GS} = 10V, I_D = 3.2 A, R_G = 20 Ω	$t_{d(off)}$	-	60	-	
Fall time V_{DD} = 350V, V_{GS} = 10V, I_D = 3.2 A,	t_f	-	30	-	

Gate Charge Characteristics

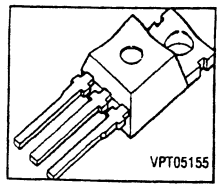
Gate-source charge I_D = 3.2 A, V_{DD} = 350V	Q_{gs}	-	3	-	nC
Gate-drain charge I_D = 3.2 A, V_{DD} = 350V	Q_{gd}	-	7.5	-	
Total gate charge V_{DD} = 350V, I_D = 3.2 A, f = 1MHz	Q_g	-	12.8	-	
Reverse transfer capacitance V_{GS} = 0V, V_{DS} = 25V, V_{GS} = 0 to 10 V,	C_{rss}	-	12	-	

Reverse Diode

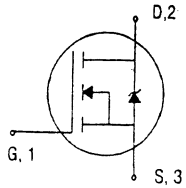
Inverse diode continuous forward current T_C = 25 °C	I_S	-	-	3.2	A
Inverse diode direct current, pulsed T_C = 25 °C	I_{SM}	-	-	5.7	
Inverse diode forward current V_{GS} = 0V, I_F = 3.2 A	V_{SD}	-	1	1.2	V
Reverse recovery time V_R = 350V, $I_F = I_S$, d_{iF} = 100 A/µs	t_{rr}	-	1000	-	ns
Reverse recovery charge V_R = 350V, $I_F = I_S$, d_{iF} = 100 A/µs	Q_{rr}	-	2.3	-	µC

SPP04N60S5 / SPB04N60S5

Cool MOS Power Transistor



- New revolutionary high voltage technology
- Ultra low gate charge
- Periodic avalanche proved
- Extreme d_v/d_t rated
- Optimized capacitances
- Improved noise immunity
- Former development designation: SPPx6N60S5/SPBx6N60S5



Type	V_{DS}	I_D	$R_{DS(on)}$	Package	Marking	Ordering Code
SPP04N60S5	600V	4.5A	0.95Ω	P-TO220-3-1	04N60S5	Q67040-S4206
SPB04N60S5				P-TO263-3-2	04N60S5	Q67040-S4201

MAXIMUM RATINGS

at T_j = 25 °C; unless otherwise specified

Parameter	Symbol	Value	Unit
Continuous drain current T_C = 25 °C T_C = 100 °C	I_D	 4.5 2.8	A
Pulsed drain current, tp = 1ms [1] T_C = 25 °C	$I_{D\ puls}$	7.7	
Avalanche energy, single pulse I_D = 4.5A, V_{DD} = 50V, R_{GS} = 25Ω Periodic avalanche energy E_{AR} only limited by T_{jmax}	E_{AS}	130	mJ
Reverse diode d_v/d_t I_S = 4.5 A, V_{DS}<V_{DSS}, d_i/d_t = 100 A/µs, T_{jmax} = 150 °C	d_v/d_t	6	kV/µs
Gate source voltage	V_{GS}	±20	V
Power dissipation T_C = 25 °C	P_{tot}	50	W
Operating and storage temperature	T_j, T_{stg}	-55 ...+150	°C

ELECTRICAL CHARACTERISTICS

Parameter at T_j = 25 °C; unless otherwise specified	Symbol	Value min.	Value typ.	Value max.	Unit
Thermal Characteristics					
Thermal resistance, junction - case	R_{thJC}	-	-	2.5	K/W
Thermal resistance, junction - ambient (Leaded and through-hole packages)	R_{thJA}	-	-	62	
SMD version, device on PCB @ min. footprint @ 6 cm² cooling area [2]	RthJA	 - -	 - 35	 62 -	
Static Characteristics					
Drain-source breakdown voltage V_{GS} = 0V, I_D = 0.25 mA	$V_{(BR)DSS}$	600	-	-	V
Gate threshold voltage, V_{GS} = V_{DS} I_D = 200 µA, T_j = 25 °C	$V_{GS(th)}$	3.5	4.5	5.5	
Zero gate voltage drain current, V_{DS} = V_{DSS} V_{GS} = 0V, T_j = 25 °C V_{GS} = 0V, T_j = 150 °C	I_{DSS}	 - -	 0.5 -	 1 50	µA
Gate-source leakage current V_{GS} = 20V, V_{DS} = 0V	I_{GSS}	-	-	100	nA
Drain Source on-state resistance V_{GS} = 10V, I_D = 2.8A	$R_{DS(on)}$	-	0.85	0.95	Ω

[1] current limited by T_{jmax}

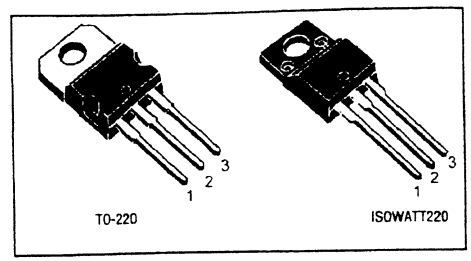
[2] Device on 50mm*50mm*1.5mm epoxy PCB FR4 with 6 cm2 (one layer, 70µm thick) copper area for drain connection. PCB is vertical without blown air.

ELECTRICAL CHARACTERISTICS

Parameter at T_j = 25 °C; unless otherwise specified	Symbol	Value			Unit
		min.	typ.	max.	
Characteristics					
Transconductance $V_{DS} \geq 2 * I_D * R_{DS(on)max}$, I_D = 2.8 A	g_{fs}	-	2.5	-	S
Input capacitance V_{GS} = 0V, V_{DS} = 25V, f = 1MHz	C_{iss}	-	600	-	pF
Output capacitance V_{GS} = 0V, V_{DS} = 25V, f = 1MHz	C_{oss}	-	325	-	
Reverse transfer capacitance V_{GS} = 0V, V_{DS} = 25V, f = 1MHz	C_{rss}	-	15	-	
Turn-on delay time V_{DD} = 350V, V_{GS} = 10V, I_D = 4.5 A, R_G = 18 Ω	$t_{d(on)}$	-	40	-	ns
Rise time V_{DD} = 350V, V_{GS} = 10V, I_D = 4.5 A, R_G = 18 Ω	t_r	-	20	-	
Turn-on delay time V_{DD} = 350V, V_{GS} = 10V, I_D = 4.5 A, R_G = 18 Ω	$t_{d(off)}$	-	60	-	
Fall time V_{DD} = 350V, V_{GS} = 10V, I_D = 4.5 A, R_G = 18Ω	t_f	-	20	-	
Gate Charge Characteristics					
Gate-source charge I_D = 4.5 A, V_{DD} = 350V	Q_{gS}	-	4.1	-	nC
Gate-drain charge I_D = 4.5 A, V_{DD} = 350V	Q_{igd}	-	9.2	-	
Total gate charge V_{DD} = 350V, I_D = 4.5 A, V_{GS} = 0 to 10 V	Q_g	-	17	-	
Reverse Diode					
Inverse diode continuous forward current T_C = 25 °C	I_S	-	-	4.5	A
Inverse diode direct current, pulsed T_C = 25 °C	I_{SM}	-	-	7.7	
Inverse diode forward current V_{GS} = 0V, I_F = 4.5 A	V_{SD}	-	1	1.2	V
Reverse recovery time V_R = 350V, I_F = I_S, $d_{iF/dt}$ = 100 A/µs	t_{rrr}	-	900	-	ns
Reverse recovery charge V_R = 350V, I_F = I_S, $d_{iF/dt}$ = 100 A/µs	Q_{rrr}	-	3.2	-	µC

7805
ositive Voltage Regulators

- Output current up to 1.5 A
- Output Voltagesof 5V
- Thermal Overload Protection
- Shortcircuit protection
- Output transition soa protection



DESCRIPTION

The L7800 series of three-terminal positive regulators is available in TO-220 ISOWATT220 TO-3 and D2 PAK packages and several fixed output voltages, making it useful in a wide range of applications. These regulators can provide local on-card regulation, eliminating the distribution problems associated with single point regulation. Each type employs internal current limiting, thermal shut-down and safe area protection, making it essentially indestructible. If adequate heat sinking is provided, they can deliver over 1A output
current. Although designed primarily as fixed voltage regulators, these devices can be used with external components to obtain adjustable voltages and currents.

ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter		Value	Unit
V_i	DC input voltage (for Vo = 5 to 18V) (for Vo = 20, 24V)		35 40	V V
I_o	Output current		internally limited	
P_{tot}	Power Dissipation		internally limited	
T_{op}	Operating Junction Temperature Range	(for L7800) (for L7800C)	-55 to 125 0 to 150	°C °C
T_{stg}	Storage Temperature Range		-40 to 150	°C

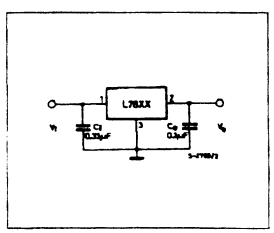
ELECTRICAL CHARACTERISTICS For L7805 (refer to the test circuits, T_j = -55 to 150 °C

Vi = 10V, Io = 500 mA, Ci = 0.33 µF, Co = 0.1 µF unless otherwise specified)

Symbol	Parameters	Test Conditions	Min.	Typ.	Max.	Unit
Vo	Output Voltage	T_j = 25 °C	4.8	5	5.2	V
Vo	Output Voltage Vi = 8 to 20 V	I_O = 5 mA to 1 A $P_O \leq$ 15W	4.65	5	5.35	V
ΔVo*	Line Regulation Vi = 8 to 12 V T_j = 25 °C	Vi = 7 to 25 V T_j = 25 °C	-	3 25	50 mV	mV
ΔVo*	Load Regulation Io = 250 to 750 mA T_j = 25 °C	Io = 5 to 1500 mA T_j = 25 °C	1	25	100 mV	mV
Id	Quiescent Current	T_j = 25 °C			6	mA
ΔId	Quiescent Current Change	Io = 5 to 1000 mA			0.5	mA
ΔId	Quiescent Current Change	Vi = 8 to 25V			0.8	mA
$\frac{\Delta Vo}{\Delta T}$	Output Voltge Drift	Io = 5 mA		0.6		mV/°C
eN	Output Noise Voltage	B = 10Hz to 100 kHz T_j = 25 °C			40	µV/Vo
SVR	Supply Voltage Rejection	Vi = 8 to 18V f= 120 Hz	68			dB
Vd	Dropout Voltage	Io = 1 A T_j = 25 °C		2	2.5	V
Ro	Output Resistance	f = 1kHz		17		mΩ
Isc	Short Circuit Current	Vi = 35V T_j = 25 °C		0.75	1.2	A
Iscp	Short Circuit Peak Current	T_j = 25 °C	1.3	2.2	3.3	A

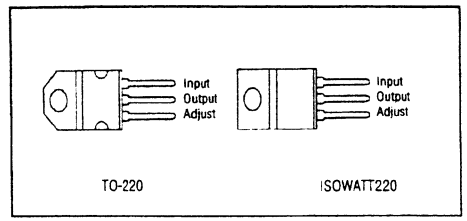
TEST CIRCUITS

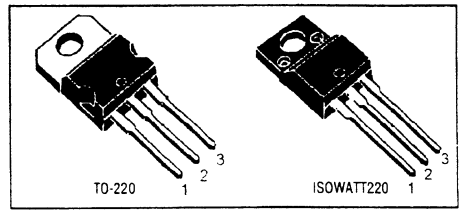
Figure 1: DC Parameter



LM317

1.2V to 37V Voltage Regulator





- Output Voltagerange : 1.2 to 37V
- Output Current in Excessof 1.5 A
- 0.1% Line and Load Regulation
- Floating Operation for High Voltages
- Complete Series of Protections: Current Limiting, Thermal Shutdown and Soa Control

DESCRIPTION

The LM117 / LM217 / LM317 are monolithic integrated circuit in TO-220, ISOWATT220, TO-3 and D 2 PAK packages intended for use as positive adjustable voltage regulators. They are designed to supply more than 1.5A of load current with an output voltage adjustable over a 1.2 to 37V range. The nominal output voltage is selected by means of only a resistive divider, making the device exceptionally easy to use and eliminating the stocking of many fixed regulators.

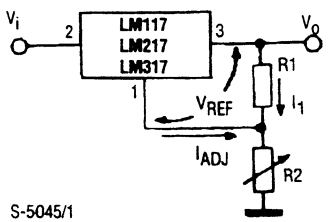
ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter	Value	Unit
V_{i-o}	Input - output differential voltage	40	V
I_O	Output current	internally limited	
T_{op}	Operating Junction Temperature for: LM117	-55 to 150	°C
	LM217	-25 to 150	°C
	LM317	0 to 125	°C
P_{tot}	Power Dissipation	internally limited	
T_{stg}	Storage Temperature	-65 to 150	°C

THERMAL DATA

Symbol	Parameter		TO-3	TO-220	ISOWATT220	D2PAK	Unit
Rthj-case	Thermal Resistance Junction - case	max.	4	3	4	3	°C/W
Rthj-amb	Thermal Resistance Junction-ambient	ma	35	50	60	62.5	°C/W

BASIC ADJUSTABLE REGULATOR



S-5045/1

ELECTRICAL CHARACTERISTICS (V_i - V_o = 5V, I_o = 500 mA, I_{MAX} = 1.5A and P_{MAX} = 20W, unless otherwise specified)

Symbol	Parameters	Test Conditions		LM117/LM217 Min.	LM117/LM217 Typ.	LM117/LM217 Max.	LM317 Min.	LM317 Typ.	LM317 Max.	Unit
ΔVo	Line Regulation	Vi -Vo = 3 to 40 V	T_j = 25 °C		0.01	0.02		0.01	0.04	%/V
					0.02	0.05		0.02	0.07	%/V
ΔVo	Load Regulation	Vo ≤ 5V Io =10mA to I_{MAX}	T_j = 25 °C		5	15		5	25	mV
					20	50		20	70	mV
		Vo ≥ 5V Io =10mA to I_{MAX}	T_j = 25 °C		0.1	0.3		0.1	0.5	%
					0.3	1		0.3	1.5	%
I_{ADJ}	Adjustment Pin Current				50	100		50	100	μA
ΔI_{ADJ}	Adjustment Pin Current	Vi -Vo = 2.5 to 40 V Io =10mA to I_{MAX}			0.2	5		0.2	5	μA
V_{REF}	Reference Voltage (between pin 3 and pin 1)	Vi -Vo = 2.5 to 40 V Io =10mA to I_{MAX} $P_D \leq P_{MAX}$		1.2	1.25	1.3	1.2	1.25		V
$\frac{\Delta Vo}{Vo}$	Output Voltage Temperature Stability				1			1		%
Io(min)	Minimum Load Current	Vi -Vo = 40 V			3.5	5		3.5	10	mA
Io(max)	Maximum Load Current	Vi -Vo ≤ 15 V $P_D < P_{MAX}$		1.5	2.2		1.5	2.2		A
		Vi -Vo = 40 V $P_D < P_{MAX}$ T_j = 25 °C			0.4			0.4		A
eN	Output Noise Voltage (percentance of Vo)	B = 10Hz to 10 kHz T_j = 25 °C			0.003			0.003		%
SVR	Supply Voltage Rejection (*)	T_j = 25 ° f = 120 Hz	C_{ADJ} = 0		65			65		dB
			C_{ADJ} = 10 μF	66	80		66	80		dB

(*) *CADJ is connected between pin 1 and ground.*

Notes: 1. *Unless otherwise specified the above specs, apply over the following conditions: LM117 Tj = -55 to 150 °C; LM217 Tj = -25 to 150 °C; LM317 Tj = 0 to 125 °C;*

U508DF
ilicon Diffused Power Transistor

GENERAL DESCRIPTION

High voltage, high-speed switching npn transistor in a fully isolated SOT199 envelope with integrated efficiency diode, primarily for use in horizontal deflection circuits of colour television receivers.

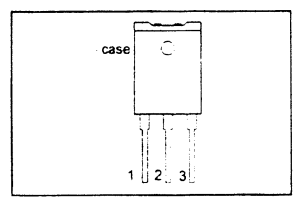
QUICK REFERENCE DATA

Symbol	Parameter	Conditions	Typ.	Max.	Unit
V_{CESM}	collector - emitter voltage peak value	V_{BE} = 0V	-	1500	V
V_{CEO}	collector - emitter voltage (open base)		-	700	V
I_C	collector current (DC)		-	8	A
I_{CM}	collector current peak value		-	15	A
P_{tot}	total power dissipation	$T_{hs} \leq 25$ °C	-	34	W
V_{CEsat}	collector - emitter saturation voltage	I_C = 4.5 A; I_B = 1.6 A	-	1.0	V
I_{Csat}	collector saturation current	f = 16kHz	4.5	-	A
V_F	Diode forward voltage	IF = 4.5 A	1.6	2.0	V
t_f	fall time	I_{Csat} = 4.5 A; f = 16kHz	0.7	-	μs

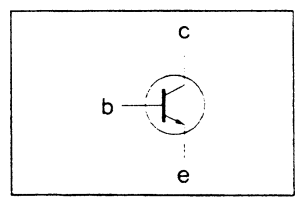
PINNING - SOT199

Pin	Description
1	base
2	collector
3	emitter
case	isolated

PIN CONFIGURATION



SYMBOL



LIMITING VALUES

Limiting values in accordance with the Absolute Maximum Rating System (IEC 134)

Symbol	Parameter	Conditions	Typ.	Max.	Unit
V_{CESM}	collector - emitter voltage peak value	V_{BE} = 0V	-	1500	V
V_{CEO}	collector - emitter voltage (open base)		-	700	V
I_C	collector current (DC)		-	8	A
I_{CM}	collector current peak value		-	15	A
I_B	Base current (DC)		-	4	A
I_{BM}	Base current peak value		-	6	A
P_{tot}	Total power dissipation	$T_{hs} \leq 25$ °C	-	34	W
T_{stg}	Storage temperature		-65	150	°C
T_j	Junction temperature		-	150	°C

THERMAL RESISTANCES

Symbol	Parameter	Conditions	Typ.	Max.	Unit
$R_{th\ j-hs}$	Junction to heatsink	without heatsink compound	-	3.7	K/W
$R_{th\ j-hs}$	Junction to heatsink	with heatsink compound	-	2.8	K/W
$R_{th\ j-a}$	Junction to ambient	in free air	35	-	K/W

U508AF
ilicon Diffused Power Transistor

GENERAL DESCRIPTION

High voltage, high-speed switching npn transistor in a fully isolated SOT199 envelope, primarily for use in horizontal deflection circuits of colour television receivers.

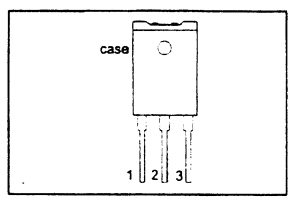
QUICK REFERENCE DATA

Symbol	Parameter	Conditions	Typ.	Max.	Unit
V_{CESM}	collector - emitter voltage peak value	V_{BE} = 0V	–	1500	V
V_{CEO}	collector - emitter voltage (open base)		–	700	V
I_C	collector current (DC)		–	8	A
I_{CM}	collector current peak value		–	15	A
P_{tot}	total power dissipation	$T_{hs} \leq 25$ °C	–	34	W
V_{CEsat}	collector - emitter saturation voltage	I_C = 4.5 A; I_B = 1.6 A	–	1.0	V
I_{Csat}	collector saturation current	f = 16kHz	4.5	–	A
t_f	fall time	I_{Csat} = 4.5 A; f = 16kHz	0.7	–	µs

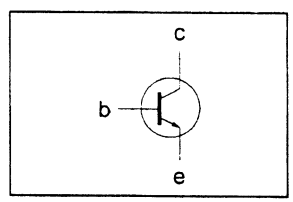
PINNING - SOT199

Pin	Description
1	base
2	collector
3	emitter
case	isolated

PIN CONFIGURATION



SYMBOL



LIMITING VALUES

Limiting values in accordance with the Absolute Maximum Rating System (IEC 134)

Symbol	Parameter	Conditions	Typ.	Max.	Unit
V_{CESM}	collector - emitter voltage peak value	V_{BE} = 0V	–	1500	V
V_{CEO}	collector - emitter voltage (open base)		–	700	V
I_C	collector current (DC)		–	8	A
I_{CM}	collector current peak value		–	15	A
I_B	Base current (DC)		–	4	A
I_{BM}	Base current peak value		–	6	A
P_{tot}	Total power dissipation	$T_{hs} \leq 25$ °C	–	34	W
T_{stg}	Storage temperature		-65	150	°C
T_j	Junction temperature		–	150	°C

THERMAL RESISTANCES

Symbol	Parameter	Conditions	Typ.	Max.	Unit
$R_{th\ j\text{-}hs}$	Junction to heatsink	without heatsink compound	–	3.7	K/W
$R_{th\ j\text{-}hs}$	Junction to heatsink	with heatsink compound	–	2.8	K/W
$R_{th\ j\text{-}a}$	Junction to ambient	in free air	35	–	K/W

ISOLATION LIMITING VALUE & CHARACTERISTICS

T_{hs} = 25 °C; unless otherwise specified

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
V_{isol}	Repetitive peak voltage from all three terminals to external heatsink	R.H.≤ 65%; clean and dustfree	–		2500	V
C_{isol}	Capaticance from T2 to external heatsink	f= 1 MHz	–	22	–	pF

STATIC CHARACTERISTICS

T_{hs} = 25 °C; unless otherwise specified

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
I_{ces}	Collector cut-off current	V_{BE} = 0 V; V_{CE} = $V_{CESMmax}$	–	–	1.0	mA
I_{ces}		V_{BE} = 0 V; V_{CE} = $V_{CESMmax}$; T_j = 125 °C	–	–	2.0	mA
I_{EBO}	Emitter cut-off current	V_{EB} = 6.0 V; I_C = 0A	–	–	10	mA
$V_{CEOsust}$	Collector-emitter sustaining voltage	I_B = 0A; I_c = 100 mA; L = 25 mH	700	–	–	V
V_{CEsat}	Collector-emitter saturation voltages	I_C = 4.5 A; I_B = 1.6 A;	–	–	1.0	V
V_{BEsat}	Base-emitter saturation voltages	I_C = 4.5 A; I_B = 2 A;	–	–	1.1	V
h_{FE}	DC current gain	I_C = 100 mA; V_{CE} = 5 V	6	13	30	
V_F	Diode forward voltage	I_F = 4.5 A	-	1.6	2.0	V

DYNAMIC CHARACTERISTICS

T_{hs} = 25 °C; unless otherwise specified

SYMBOL	PARAMETER	CONDITIONS	TYP.	MAX.	UNIT
f_T	Transition frequency at f= 5 MHz	I_C= 0.1 A; V_{CE} = 5 V	7	–	MHz
C_c	Collector capacitance at f= 5 MHz	V_{CB} = 10V	125	–	pF
	Switching times (16 kHz line deflection circuit)	I_{Csat} = 4.5 A; L_c 1 mH; C_{fb} = 4 nF $I_{B(end)}$ = 1.4 A; L_B = 6 µH; $-V_{BB}$ = -4 V; $-I_{BM}$ = 2.25A			
t_s	Turn-off storage time		6.5	–	µs
t_f	Turn-off fall time		0.7	–	µs

ISOLATION LIMITING VALUE & CHARACTERISTICS

T_{hs} = 25 °C; unless otherwise specified

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
V_{isol}	Repetitive peak voltage from all three terminals to external heatsink	R.H.≤ 65%; clean and dustfree	-	-	2500	V
C_{isol}	Capacitance from T2 to external heatsink	f= 1 MHz	-	22	-	pF

STATIC CHARACTERISTICS

T_{hs} = 25 °C; unless otherwise specified

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
I_{CES}	Collector cut-off current [1]	V_{BE} = 0 V; V_{CE} = $V_{CESMmax}$	-	-	1.0	mA
I_{CES}		V_{BE} = 0 V; V_{CE} = $V_{CESMmax}$; T_j = 125 °C	-	-	2.0	mA
I_{EBO}	Emitter cut-off current	V_{EB} = 6.0 V; I_C = 0A	-	-	10	mA
$V_{CEOsust}$	Collector-emitter sustaining voltage	I_B = 0A; I_c = 100 mA; L = 25 mH	700	-	-	V
V_{CEsat}	Collector-emitter saturation voltages	I_C = 4.5 A; I_B = 1.6 A;	-	-	1.0	V
V_{BEsat}	Base-emitter saturation voltages	I_C = 4.5 A; I_B = 2 A;	-	-	1.1	V
h_{FE}	DC current gain	I_C = 100 mA; V_{CE} = 5 V	6	13	30	

DYNAMIC CHARACTERISTICS

T_{hs} = 25 °C; unless otherwise specified

SYMBOL	PARAMETER	CONDITIONS	TYP.	MAX.	UNIT
f_T	Transition frequency at f= 5 MHz	Ic= 0.1 A; VCE = 5 V	7	-	MHz
C_c	Collector capacitance at f= 5 MHz	V_{CB} = 10V	125	-	pF
	Switching times (16 kHz line deflection circuit)	I_{Csat} = 4.5 A; L_c 1 mH;; C_{fb} = 4 nF $I_{B(end)}$ = 1.4 A; L_B = 6 µH; -V_{BB} = -4 V; -I_{BM} = 2.25A			
t_s	Turn-off storage time		6.5	-	µs
t_f	Turn-off fall time		0.7	-	µs

Chassis Replacement Part List

POS.	CODE	DESCRIPTION	BOARD	FUNC.
CD15	620004036841	CAP MKP 680NF 250VDC 5% 22.5MM	MAIN	110 DEGREE
CD24	618013012231	CAP KT 22NF 50V 5% 5MM	MAIN	110 DEGREE
DD22	048327030001	DIODE ZNR.36V BZD23C SOD-81	MAIN	110 DEGREE
DV01	048210411001	DIODE GP.1N4148 DO-35	MAIN	110 DEGREE
LD03	608980004011	COIL LINEARITY LC110&AT4042/92	MAIN	110 DEGREE
RV07	030010668161	RESISTOR C.F 680R 1/10W 5% 0603	MAIN	110 DEGREE
RV70	030010656161	RESISTOR C.F 560R 1/10W 5% 0603	MAIN	110 DEGREE
RV71	030010656161	RESISTOR C.F 560R 1/10W 5% 0603	MAIN	110 DEGREE
RV72	030010656161	RESISTOR C.F 560R 1/10W 5% 0603	MAIN	110 DEGREE
0088	000100340600	WIRE TINNED COPPER NLT060	MAIN	110 DEGREE
0094	000100340600	WIRE TINNED COPPER NLT060	MAIN	110 DEGREE
0095	000100340600	WIRE TINNED COPPER NLT060	MAIN	110 DEGREE
0096	000100340600	WIRE TINNED COPPER NLT060	MAIN	110 DEGREE
0097	000100340600	WIRE TINNED COPPER NLT060	MAIN	110 DEGREE
0098	000100340600	WIRE TINNED COPPER NLT060	MAIN	110 DEGREE
0101	000100340600	WIRE TINNED COPPER NLT060	MAIN	110 DEGREE
CD04	619323871031	CAP MKP 10NF 1.6KV 3.5%15-25MM	MAIN	110 DEGREE
CD05	620003102731	CAP MKP 27NF 1KV 5% 15-27.5MM	MAIN	110 DEGREE
CD06	042414634771	CAP ELECT 4.7MF 63V 20%	MAIN	110 DEGREE
CD10	620013054741	CAP MKP 470NF 250VDC 5% 22.5MM	MAIN	110 DEGREE
CD19	040067041081	CAP CER 100NF 50V 20% Z5U 0805	MAIN	110 DEGREE
CD20	042140164771	CAP ELECT 470MF 16V 20%	MAIN	110 DEGREE
CD21	618014011041	CAP KT 100NF 63V 10% 5MM	MAIN	110 DEGREE
CD22	620004083341	CAP MKT 330NF 63V 5% 5MM	MAIN	110 DEGREE
CD23	042414631071	CAP ELECT 100MF 63V 20%	MAIN	110 DEGREE
CD26	042440251081	CAP ELECT 1.000MF 25V 20%	MAIN	110 DEGREE
CD29	040752041081	CAP CER 1NF 50V 10% X7R 0805	MAIN	110 DEGREE
DD03	048990222221	DIODE RECT.BY228 SOD64/DO15	MAIN	110 DEGREE
DD04	048000000021	DIODE RECT.600V 1.5A SOD-57	MAIN	110 DEGREE
DD08	048000000011	DIODE RECT.BYD33D SOD-81	MAIN	110 DEGREE
DD21	048321423201	DIODE RECT.1N4007 DO-41	MAIN	110 DEGREE
FBT1	604200900001	TRF.FBT 110 DEGREE PT90A	MAIN	110 DEGREE
FP01	067420001811	FUSE 3.15A 250V TIME-LAG	MAIN	110 DEGREE
ID02	045000000931	IC STV9306 VERTICAL DEFLECTION	MAIN	110 DEGREE
LD01	608380000321	COIL CHOKE 10MH 15% E/W COR.	MAIN	110 DEGREE
LD04	608380000371	COIL CHOKE 1.2MH E/W 10% 2A	MAIN	110 DEGREE
PTC1	034710303641	THERM PTC 30R 30% 3P 10/2.5MM	MAIN	110 DEGREE
RA02	030010610381	RESISTOR C.F 10K 1/8W 5% 0805	MAIN	110 DEGREE
RD12	030020627231	RESISTOR C.F 2.7K 1/4W 5%	MAIN	110 DEGREE
RD17	030055722811	RESISTOR FUSIBLE 0.22R 1/2W 5%	MAIN	110 DEGREE
RD22	030010610381	RESISTOR C.F 10K 1/8W 5% 0805	MAIN	110 DEGREE
RD23	030010615381	RESISTOR C.F 15K 1/8W 5% 0805	MAIN	110 DEGREE
RD24	030010610481	RESISTOR C.F 100K 1/8W 5% 0805	MAIN	110 DEGREE
RD25	030010622281	RESISTOR C.F 2.2K 1/8W 5% 0805	MAIN	110 DEGREE
RD26	030010610181	RESISTOR C.F 100R 1/8W 5% 0805	MAIN	110 DEGREE
RD27	030010610181	RESISTOR C.F 100R 1/8W 5% 0805	MAIN	110 DEGREE

POS.	CODE	DESCRIPTION	BOARD	FUNC.
RD30	030025610011	RESISTOR FUSIBLE 10R 1/4W 5%	MAIN	110 DEGREE
RD31	030010622481	RESISTOR C.F 220K 1/8W 5% 0805	MAIN	110 DEGREE
RD32	030020668381	RESISTOR C.F 68K 1/8W 5% 0805	MAIN	110 DEGREE
RD33	030010610381	RESISTOR C.F 10K 1/8W 5% 0805	MAIN	110 DEGREE
RD34	030010656181	RESISTOR C.F 560R 1/8W 5% 0805	MAIN	110 DEGREE
RD35	030010610181	RESISTOR C.F 100R 1/8W 5% 0805	MAIN	110 DEGREE
RD36	030010610181	RESISTOR C.F 100R 1/8W 5% 0805	MAIN	110 DEGREE
RD37	030059622211	RESISTOR M.O 220R 1W 5% NONFLMB	MAIN	110 DEGREE
RP15	030020633031	RESISTOR M.O. 15K 2W %5	MAIN	110 DEGREE
RP64	030020615431	RESISTOR C.F 150K 1/4W 5%	MAIN	110 DEGREE
TD02	046000000191	TRS.BU508AFI ISOWATT-218	MAIN	110 DEGREE
TD21	046926265281	TRS.BC556B TO-92	MAIN	110 DEGREE
TP01	046711000011	TRS.SPP04N60S5 TO-220	MAIN	110 DEGREE
WP02	602190000001	"TRF.SMPS 110° 28"" PT92"	MAIN	110 DEGREE
CD03	040040172221	CAP.CER. 2.2N 2KV %10	MAIN	"110 DEGREE(28""PANASONIC)"
LD02	000100340600	WIRE TINNED COPPER NLT060	MAIN	"110 DEGREE(28""PANASONIC)"
RD09	030055722811	RESISTOR FUSIBLE 0.22R 1/2W 5%	MAIN	"110 DEGREE(28""PANASONIC)"
RD29	030059647811	RESISTOR M.O 0.47R 1W 5% NONFLMB	MAIN	"110DEGREE(28"" PANASONIC)"
CP06	042330901011	CAP ELECT 220MF 200V20%SNAP-IN	MAIN	110V AC
LFP1	608980003851	LINE FILTER 2*75MH 2A N. 3AMAX	MAIN	110V AC
CP06	042719901071	CAP ELECT 100MF400V20% SNAP-IN	MAIN	220V AC
LFP1	608980003721	LINE FILTER 2*75MH ELF-18D615	MAIN	220V AC
CD15	620013054741	CAP MKP 470NF 250VDC 5% 22.5MM	MAIN	90 DEGREE
LD03	608980004051	COIL LINEARITY 50UH	MAIN	90 DEGREE
RD11	030010622381	RESISTOR C.F 22K 1/8W 5% 0805	MAIN	90 DEGREE
RV07	030010682161	RESISTOR C.F 820R 1/10W 5% 0603	MAIN	90 DEGREE
RV70	030010610261	RES C F 1K 1/10W 5% 0603	MAIN	90 DEGREE
RV71	030010610261	RES C F 1K 1/10W 5% 0603	MAIN	90 DEGREE
RV72	030010610261	RES C F 1K 1/10W 5% 0603	MAIN	90 DEGREE
0100	000100340600	WIRE TINNED COPPER NLT060	MAIN	90 DEGREE
0103	000100340600	WIRE TINNED COPPER NLT060	MAIN	90 DEGREE
CD05	000100340600	WIRE TINNED COPPER NLT060	MAIN	90 DEGREE
CD41	620004072241	CAP MKT 220NF 63V 10% 5MM	MAIN	90 DEGREE
CD42	621003004731	CAP MKT 47NF 50V 5% 5MM	MAIN	90 DEGREE
CD43	042416502261	CAP ELECT 22MF 50V 20%	MAIN	90 DEGREE
CD44	042414351081	CAP ELECT 2200MF 35V 20%	MAIN	90 DEGREE
CD45	042414631071	CAP ELECT 100MF 63V 20%	MAIN	90 DEGREE
DD04	000100340600	WIRE TINNED COPPER NLT060	MAIN	90 DEGREE
DD41	048321423201	DIODE RECT.1N4007 DO-41	MAIN	90 DEGREE
FBT1	604200900011	TRF.FBT 90 DEGREE PT90A	MAIN	90 DEGREE
FP01	067310001831	FUSE 2.5A 250V 5X20MM TIME-LAG	MAIN	90 DEGREE
ID41	045000001971	IC TDA1771 VERTICAL DEFLECTION	MAIN	90 DEGREE
JD02	000100340600	WIRE TINNED COPPER NLT060	MAIN	90 DEGREE
JD41	000100340600	WIRE TINNED COPPER NLT060	MAIN	90 DEGREE
JD42	000100340600	WIRE TINNED COPPER NLT060	MAIN	90 DEGREE
PTC1	034710303681	THERM PTC 9R 30% 2P 10/2.5MM	MAIN	90 DEGREE

POS.	CODE	DESCRIPTION	BOARD	FUNC.
RA02	030010647281	RESISTOR C.F 4.7K 1/8W 5% 0805	MAIN	90 DEGREE
RD12	030020633231	RESISTOR C.F 3.3K 1/4W 5%	MAIN	90 DEGREE
RD33	030010600081	RESISTOR C.F 0R 1/8W 5% 0805	MAIN	90 DEGREE
RD41	030020622911	RESISTOR C.F 2.2R 1/4W 5%	MAIN	90 DEGREE
RD42	030010682381	RESISTOR C.F 82K 1/8W 5% 0805	MAIN	90 DEGREE
RD43	030010618481	RESISTOR C.F 180K 1/8W 5% 0805	MAIN	90 DEGREE
RD44	030020610411	RESISTOR C.F 100K 1/4W 5%	MAIN	90 DEGREE
RD45	030010682281	RESISTOR C.F 8.2K 1/8W 5% 0805	MAIN	90 DEGREE
RD46	030010668181	RESISTOR C.F 680R 1/8W 5% 0805	MAIN	90 DEGREE
RD47	030000627261	RES CF 2.7K 1/10W 1% 0603	MAIN	90 DEGREE
RD48	030010612281	RESISTOR C.F 1.2K 1/8W 5% 0805	MAIN	90 DEGREE
RD49	030011622161	RES CF 220R 1/10W 5% 0603	MAIN	90 DEGREE
RD50	030020610911	RESISTOR C.F 1R 1/4W 5%	MAIN	90 DEGREE
RD51	030020647131	RESISTOR C.F 470R 1/4W 5%	MAIN	90 DEGREE
RD52	030020633131	RESISTOR C.F 330R 1/4W 5%	MAIN	90 DEGREE
RD53	030010668281	RESISTOR C.F 6.8K 1/8W 5% 0805	MAIN	90 DEGREE
RD54	030020633231	RESISTOR C.F 3.3K 1/4W 5%	MAIN	90 DEGREE
RD55	030010639381	RESISTOR C.F 39K 1/8W 5% 0805	MAIN	90 DEGREE
RP15	030208612311	RESISTOR M.O 12K 2W 5%	MAIN	90 DEGREE
RP64	030020612411	RESISTOR C.F 120K 1/4W 5%	MAIN	90 DEGREE
TD02	046000000141	TRS.PT11&PT2 HOR.OUT.	MAIN	90 DEGREE
TD41	046246022281	TRS.BC547B TO-92	MAIN	90 DEGREE
TD42	046247018001	TRS.BC337 TO-92	MAIN	90 DEGREE
TD43	046986294161	TRS.2SA720 & BC327 TO-92	MAIN	90 DEGREE
TP01	46711000001	TRS.SPP03N60S5 TO-220	MAIN	90 DEGREE
WP02	602190000021	"TRF.SMPS 90° 20/21""PT92 STEREO"	MAIN	90 DEGREE
CD04	618008127211	CAP MKP 7.2NF 1.6KV 2.5% 22.5MM	MAIN	"90 DEGREE (20""EKRANAS)"
CD04	618008127211	CAP MKP 7.2NF 1.6KV 2.5% 22.5MM	MAIN	"90 DEGREE (20""SAMSUNG)"
CD04	618003206801	CAP MKP 6.8NF 2KV 5%22.5/15MM	MAIN	"90 DEGREE (21""EKRANAS)"
CD04	618008127211	CAP MKP 7.2NF 1.6KV 2.5% 22.5MM	MAIN	"90 DEGREE (21""HITACHI)"
CD04	618003206801	CAP MKP 6.8NF 2KV 5%22.5/15MM	MAIN	"90 DEGREE (21""SAMSUNG)"
CD04	619323776221	CAP MKP 6.2NF 1.6KV 2.5% 22.5MM	MAIN	"90 DEGREE (21""VIDEOCOLOR)"
LD02	000100340600	WIRE TINNED COPPER NLT060	MAIN	"90 DEGREE(20""EKRANAS)"
RD09	030108610911	RESISTOR M.O 1R 1W 5%	MAIN	"90 DEGREE(20""EKRANAS)"
CD03	040040171021	CAP CER 1NF 2KV 10% BN	MAIN	"90 DEGREE(20""SAMSUNG)"
LD02	000100340600	WIRE TINNED COPPER NLT060	MAIN	"90 DEGREE(20""SAMSUNG)"
RD09	030108618911	RESISTOR M.O 1.8R 1W 5%	MAIN	"90 DEGREE(20""SAMSUNG)"
LD02	608380002401	COIL CHOKE 150UH 15% 0.5A 5MM	MAIN	"90 DEGREE(21""EKRANAS)"
RD09	030108610911	RESISTOR M.O 1R 1W 5%	MAIN	"90 DEGREE(21""EKRANAS)"
LD02	608380002401	COIL CHOKE 150UH 15% 0.5A 5MM	MAIN	"90 DEGREE(21""HITACHI)"
RD09	030108610911	RESISTOR M.O 1R 1W 5%	MAIN	"90 DEGREE(21""HITACHI)"
LD02	608380002721	COIL CHOKE 56UH 15% 0.8A	MAIN	"90 DEGREE(21""SAMSUNG)"
RD09	030108610911	RESISTOR M.O 1R 1W 5%	MAIN	"90 DEGREE(21""SAMSUNG)"
LD02	000100340600	WIRE TINNED COPPER NLT060	MAIN	"90 DEGREE(21""VIDEOCOLOR)"
RD09	030108610911	RESISTOR M.O 1R 1W 5%	MAIN	"90 DEGREE(21""VIDEOCOLOR)"
ICM1	045000001501	IC MSP3400D D.SOUND PROCESSOR	MAIN	A2+HPH

POS.	CODE	DESCRIPTION	BOARD	FUNC.
ICM1	045000001561	IC MSP3410D D.SOUND PROCESSOR	MAIN	A2+HPH+NICAM
ICM1	045000001511	IC MSP3415D D.SOUND PROCESSOR	MAIN	A2+NICAM
SA01	037730007951	FILTER SAW G1962M B/G INTCR	MAIN	B/G
FV01	037730007071	FILTER TRAP 5.5MHZ TPS5.5MB	MAIN	B/G
FV01	037730007061	FILTER TRAP 5.5/6.5MHZ TPWA02B	MAIN	B/G D/K
SA01	037730007911	FILTER SAW K2966M	MAIN	B/G D/K
0130	000100340600	WIRE TINNED COPPER NLT060	MAIN	BASIC
0132	000100340600	WIRE TINNED COPPER NLT060-10mm	MAIN	BASIC
0134	000100340600	WIRE TINNED COPPER NLT060 - 10mm	MAIN	BASIC
0135	000100340600	WIRE TINNED COPPER NLT060 - 7.5mm	MAIN	BASIC
0137	000100340600	WIRE TINNED COPPER NLT060 - 7.5mm	MAIN	BASIC
0139	000100340600	WIRE TINNED COPPER NLT060 - 15mm	MAIN	BASIC
0151	000100340600	WIRE TINNED COPPER NLT060	MAIN	BASIC
0154	030010600061	RESISTOR C.F 0R 1/10W 5% 0603	MAIN	BASIC
AC01	075030261001	CONN 2P VRT W/LOCK 10MM HRZ MAIN	MAIN	BASIC
C026	040732041081	CAP CER 100PF 50V 5% COG 0805	MAIN	BASIC
C103	042416501051	CAP ELECT 1MF 50V 20%	MAIN	BASIC
CD61	040040154711	CAP CER 470PF 1KV 10% B	MAIN	BASIC
CD63	618014002221	CAP KT 2.2NF 100V 10% 5MM	MAIN	BASIC
CH13	030010600061	RESISTOR C.F 0R 1/10W 5% 0603	MAIN	BASIC
CS11	040752041081	CAP CER 1NF 50V 10% X7R 0805	MAIN	BASIC
CS13	040052044861	CAP CER 470PF 50V 5% COG 0603	MAIN	BASIC
CS14	040052044861	CAP CER 470PF 50V 5% COG 0603	MAIN	BASIC
CV43	040043447261	CAP CER 4.7NF 50V 10% X7R 0603	MAIN	BASIC
CV44	040730014061	CAP CER 10NF 50V 10% X7R 0603	MAIN	BASIC
DP80	000100340600	WIRE TINNED COPPER NLT060	MAIN	BASIC
IP04	045238103081	IC LM7805 5V1A VOLT REG TO-220	MAIN	BASIC
J801	030010600081	RESISTOR C.F 0R 1/8W 5% 0805	MAIN	BASIC
L701	608000000011	COIL 10UH 10% 0.16A AXIAL FIX	MAIN	BASIC
LP80	000100340600	WIRE TINNED COPPER NLT060	MAIN	BASIC
PCB	614099080280	PCB(99TA028H)ANA SASE PT90A	MAIN	BASIC
PCB	614099090280	PCB(99TA028I) ANA SASE PT90A	MAIN	BASIC
R100	030010610081	RESISTOR C.F 10R 1/8W 5% 0805	MAIN	BASIC
RA25	030010612261	RESISTOR C.F 1.2K 1/10W5% 0603	MAIN	BASIC
RA26	030010647261	RESISTOR C.F 4.7K 1/10W5% 0603	MAIN	BASIC
RA27	030010618261	RESISTOR C.F 1.8K 1/10W5% 0603	MAIN	BASIC
RA28	030020633411	RESISTOR C.F 330K 1/4W 5%	MAIN	BASIC
RA29	030010615461	RESISTOR C.F 150K 1/10W5% 0603	MAIN	BASIC
RA30	030010633361	RESISTOR C.F 33K 1/10W5% 0603	MAIN	BASIC
RP40	030020647431	RESISTOR C.F 470K 1/4W 5%	MAIN	BASIC
RP54	030010612481	RESISTOR C.F 120K 1/8W 5% 0805	MAIN	BASIC
RP67	030010622181	RESISTOR C.F 220R 1/8W 5% 0805	MAIN	BASIC
RS10	030010610481	RESISTOR C.F 100K 1/8W 5% 0805	MAIN	BASIC
RV61	030010668161	RESISTOR C.F 680R 1/10W5% 0603	MAIN	BASIC
RV95	030010683481	RESISTOR C.F 2.2R 1/8W 5% 0805	MAIN	BASIC
TA02	046246022281	TRS.BC547B TO-92	MAIN	BASIC

POS.	CODE	DESCRIPTION	BOARD	FUNC.
0001	000100340600	WIRE TINNED COPPER NLT060	MAIN	BASIC
0002	000100340600	WIRE TINNED COPPER NLT060	MAIN	BASIC
0004	000100340600	WIRE TINNED COPPER NLT060	MAIN	BASIC
0005	000100340600	WIRE TINNED COPPER NLT060	MAIN	BASIC
0006	000100340600	WIRE TINNED COPPER NLT060	MAIN	BASIC
0007	000100340600	WIRE TINNED COPPER NLT060	MAIN	BASIC
0008	000100340600	WIRE TINNED COPPER NLT060	MAIN	BASIC
0009	608000000221	COIL 10UH 5% 0.41A AXIAL FIXED	MAIN	BASIC
0010	000100340600	WIRE TINNED COPPER NLT060	MAIN	BASIC
0013	000100340600	WIRE TINNED COPPER NLT060	MAIN	BASIC
0014	000100340600	WIRE TINNED COPPER NLT060	MAIN	BASIC
0015	000100340600	WIRE TINNED COPPER NLT060	MAIN	BASIC
0017	000100340600	WIRE TINNED COPPER NLT060	MAIN	BASIC
0020	000100340600	WIRE TINNED COPPER NLT060	MAIN	BASIC
0021	000100340600	WIRE TINNED COPPER NLT060	MAIN	BASIC
0022	000100340600	WIRE TINNED COPPER NLT060	MAIN	BASIC
0023	000100340600	WIRE TINNED COPPER NLT060	MAIN	BASIC
0024	000100340600	WIRE TINNED COPPER NLT060	MAIN	BASIC
0027	000100340600	WIRE TINNED COPPER NLT060	MAIN	BASIC
0033	000100340600	WIRE TINNED COPPER NLT060	MAIN	BASIC
0034	000100340600	WIRE TINNED COPPER NLT060	MAIN	BASIC
0036	000100340600	WIRE TINNED COPPER NLT060	MAIN	BASIC
0037	000100340600	WIRE TINNED COPPER NLT060	MAIN	BASIC
0041	000100340600	WIRE TINNED COPPER NLT060	MAIN	BASIC
0045	000100340600	WIRE TINNED COPPER NLT060	MAIN	BASIC
0046	000100340600	WIRE TINNED COPPER NLT060	MAIN	BASIC
0047	000100340600	WIRE TINNED COPPER NLT060	MAIN	BASIC
0048	000100340600	WIRE TINNED COPPER NLT060	MAIN	BASIC
0049	000100340600	WIRE TINNED COPPER NLT060	MAIN	BASIC
0050	000100340600	WIRE TINNED COPPER NLT060	MAIN	BASIC
0052	000100340600	WIRE TINNED COPPER NLT060	MAIN	BASIC
0055	000100340600	WIRE TINNED COPPER NLT060	MAIN	BASIC
0056	000100340600	WIRE TINNED COPPER NLT060	MAIN	BASIC
0057	000100340600	WIRE TINNED COPPER NLT060	MAIN	BASIC
0061	000100340600	WIRE TINNED COPPER NLT060	MAIN	BASIC
0064	000100340600	WIRE TINNED COPPER NLT060	MAIN	BASIC
0069	000100340600	WIRE TINNED COPPER NLT060	MAIN	BASIC
0072	000100340600	WIRE TINNED COPPER NLT060	MAIN	BASIC
0077	000100340600	WIRE TINNED COPPER NLT060	MAIN	BASIC
0085	000100340600	WIRE TINNED COPPER NLT060	MAIN	BASIC
0086	000100340600	WIRE TINNED COPPER NLT060	MAIN	BASIC
0087	000100340600	WIRE TINNED COPPER NLT060	MAIN	BASIC
0089	000100340600	WIRE TINNED COPPER NLT060	MAIN	BASIC
0090	000100340600	WIRE TINNED COPPER NLT060	MAIN	BASIC
0091	000100340600	WIRE TINNED COPPER NLT060	MAIN	BASIC
0092	000100340600	WIRE TINNED COPPER NLT060	MAIN	BASIC

POS.	CODE	DESCRIPTION	BOARD	FUNC.
0093	000100340600	WIRE TINNED COPPER NLT060	MAIN	BASIC
0099	000100340600	WIRE TINNED COPPER NLT060	MAIN	BASIC
0100	000100340600	WIRE TINNED COPPER NLT060	MAIN	BASIC
0105	000100340600	WIRE TINNED COPPER NLT060	MAIN	BASIC
0106	000100340600	WIRE TINNED COPPER NLT060	MAIN	BASIC
0108	000100340600	WIRE TINNED COPPER NLT060	MAIN	BASIC
0117	000100340600	WIRE TINNED COPPER NLT060	MAIN	BASIC
0119	000100340600	WIRE TINNED COPPER NLT060	MAIN	BASIC
0120	000100340600	WIRE TINNED COPPER NLT060	MAIN	BASIC
0129	000100340600	WIRE TINNED COPPER NLT060	MAIN	BASIC
0155	030010600061	RESISTOR C.F OR 1/10W 5% 0603	MAIN	BASIC
0156	000100340600	WIRE TINNED COPPER NLT060	MAIN	BASIC
0157	000100340600	WIRE TINNED COPPER NLT060	MAIN	BASIC
0158	000100340600	WIRE TINNED COPPER NLT060	MAIN	BASIC
0160	000100340600	WIRE TINNED COPPER NLT060	MAIN	BASIC
0161	000100340600	WIRE TINNED COPPER NLT060	MAIN	BASIC
0162	030010600061	RESISTOR C.F OR 1/10W 5% 0603	MAIN	BASIC
1PCB	614099080280	PCB(99TA028H)ANA SASE PT90A	MAIN	BASIC
C001	042416501051	CAP ELECT 1MF 50V 20%	MAIN	BASIC
C004	042140161071	CAP ELECT 100MF 16V 20%	MAIN	BASIC
C011	040067041081	CAP CER 100NF 50V 20% Z5U 0805	MAIN	BASIC
C020	040730014081	CAP CER 10NF 50V 10% X7R 0805	MAIN	BASIC
C024	040730022281	CAP CER 2.2NF 50V 10% X7R 0805	MAIN	BASIC
C032	042446501061	CAP ELECT 10MF 50V 20%	MAIN	BASIC
CA01	040067041081	CAP CER 100NF 50V 20% Z5U 0805	MAIN	BASIC
CA02	618013011031	CAP KT 10NF 50V 5% 5MM	MAIN	BASIC
CA03	040050043381	CAP CER 3.3NF 50V 10% X7R 0805	MAIN	BASIC
CA05	042140164771	CAP ELECT 470MF 16V 20%	MAIN	BASIC
CA06	040044081881	CAP CER 470NF 16V 10% X7R 0805	MAIN	BASIC
CA09	040067041081	CAP CER 100NF 50V 20% Z5U 0805	MAIN	BASIC
CA11	042440251081	CAP ELECT 1.000MF 25V 20%	MAIN	BASIC
CA23	040067041081	CAP CER 100NF 50V 20% Z5U 0805	MAIN	BASIC
CD01	042414254761	CAP ELECT 47MF 25V 20%	MAIN	BASIC
CD02	618013012231	CAP KT 22NF 50V 5% 5MM	MAIN	BASIC
CD07	040067041081	CAP CER 100NF 50V 20% Z5U 0805	MAIN	BASIC
CD08	042416160001	CAP ELECT 22MF 160V 20%	MAIN	BASIC
CD09	042440861061	CAP ELECT 10MF 250V 20%	MAIN	BASIC
CD11	040067041081	CAP CER 100NF 50V 20% Z5U 0805	MAIN	BASIC
CD12	042440354771	CAP ELECT 470MF 35V 20%	MAIN	BASIC
CD13	040046151021	CAP CER 1NF 1KV 10% BN	MAIN	BASIC
CD14	042416864721	CAP ELECT 4.7MF 250V 20%	MAIN	BASIC
CD16	620013081041	CAP MKT 100NF 63V 5% 5MM	MAIN	BASIC
CD17	618014011041	CAP KT 100NF 63V 10% 5MM	MAIN	BASIC
CD18	040031042281	CAP CER 22PF 50V 5% COG 0805	MAIN	BASIC
CD25	040067041081	CAP CER 100NF 50V 20% Z5U 0805	MAIN	BASIC
CD28	040044081881	CAP CER 470NF 16V 10% X7R 0805	MAIN	BASIC

POS.	CODE	DESCRIPTION	BOARD	FUNC.
CP01	620005141041	CAP MKT 100NF 275VAC 20% RFIX2	MAIN	BASIC
CP02	620005141041	CAP MKT 100NF 275VAC 20% RFIX2	MAIN	BASIC
CP03	040040152211	CAP CER 2.2NF 1KV 10% BN	MAIN	BASIC
CP04	040040152211	CAP CER 2.2NF 1KV 10% BN	MAIN	BASIC
CP05	620004133331	CAP MKP 33NF 630V 5% 15MM	MAIN	BASIC
CP07	040730014081	CAP CER 10NF 50V 10% X7R 0805	MAIN	BASIC
CP08	040040156811	CAP CER 680PF 1KV 10% BN	MAIN	BASIC
CP09	042416502261	CAP ELECT 22MF 50V 20%	MAIN	BASIC
CP10	040730014081	CAP CER 10NF 50V 10% X7R 0805	MAIN	BASIC
CP11	040031042281	CAP CER 22PF 50V 5% COG 0805	MAIN	BASIC
CP12	040050056881	CAP CER 680PF 50V 5% COG 0805	MAIN	BASIC
CP13	040752041061	CAP CER 1 NF 50V 10% X7R 0603	MAIN	BASIC
CP14	040258764721	CAPCER4.7NF400VAC20%4KVSFYX1Y1	MAIN	BASIC
CP15	040730014081	CAP CER 10NF 50V 10% X7R 0805	MAIN	BASIC
CP16	042440631181	CAP ELECT 1.000MF 50V 20%	MAIN	BASIC
CP18	042419834761	CAP ELECT 47MF 160V 20%	MAIN	BASIC
CP21	042440251081	CAP ELECT 1.000MF 25V 20%	MAIN	BASIC
CP22	040067041081	CAP CER 100NF 50V 20% Z5U 0805	MAIN	BASIC
CP24	042449254771	CAP ELECT 470MF 25V 20%	MAIN	BASIC
CP25	040067041081	CAP CER 100NF 50V 20% Z5U 0805	MAIN	BASIC
CP26	042416502261	CAP ELECT 22MF 50V 20%	MAIN	BASIC
CP27	040730014081	CAP CER 10NF 50V 10% X7R 0805	MAIN	BASIC
CP29	040067041081	CAP CER 100NF 50V 20% Z5U 0805	MAIN	BASIC
CP31	042140161071	CAP ELECT 100MF 16V 20%	MAIN	BASIC
CP32	040067041081	CAP CER 100NF 50V 20% Z5U 0805	MAIN	BASIC
CP33	042416501051	CAP ELECT 1MF 50V 20%	MAIN	BASIC
CP34	042140161071	CAP ELECT 100MF 16V 20%	MAIN	BASIC
CP35	040067041081	CAP CER 100NF 50V 20% Z5U 0805	MAIN	BASIC
CP36	040040154711	CAP CER 470PF 1KV 10% B	MAIN	BASIC
CP37	620005076831	CAP MKP 68NF 275V AC 20% RFIX2	MAIN	BASIC
CP39	040050151011	CAP CER 100PF 1KVAC 20% P7.5HT	MAIN	BASIC
CP40	040067041361	CAP CER 100NF 25V 20% 0603	MAIN	BASIC
CP41	042140161071	CAP ELECT 100MF 16V 20%	MAIN	BASIC
CP60	040732041081	CAP CER 100PF 50V 5% COG 0805	MAIN	BASIC
CP61	040730014081	CAP CER 10NF 50V 10% X7R 0805	MAIN	BASIC
CS01	040040253361	CAP CER 330PF 50V 10% 0603	MAIN	BASIC
CS02	040040253361	CAP CER 330PF 50V 10% 0603	MAIN	BASIC
CS07	040752041081	CAP CER 1NF 50V 10% X7R 0805	MAIN	BASIC
CS08	040752041081	CAP CER 1NF 50V 10% X7R 0805	MAIN	BASIC
CT01	042414254761	CAP ELECT 47MF 25V 20%	MAIN	BASIC
CT02	042446501061	CAP ELECT 10MF 50V 20%	MAIN	BASIC
CT03	040067041081	CAP CER 100NF 50V 20% Z5U 0805	MAIN	BASIC
CT04	040013081041	CAP CER 100NF 63V 10%	MAIN	BASIC
CT09	620013081041	CAP MKT 100NF 63V 5% 5MM	MAIN	BASIC
CV02	042446501061	CAP ELECT 10MF 50V 20%	MAIN	BASIC
CV03	040040042281	CAP CER 22NF 50V 20% Z5U 0805	MAIN	BASIC

POS.	CODE	DESCRIPTION	BOARD	FUNG.
CV04	042416501051	CAP ELECT 1MF 50V 20%	MAIN	BASIC
CV05	040752041081	CAP CER 1NF 50V 10% X7R 0805	MAIN	BASIC
CV06	040052043381	CAP CER 330NF 50V20-80%Y5V0805	MAIN	BASIC
CV07	042414254761	CAP ELECT 47MF 25V 20%	MAIN	BASIC
CV08	040067041081	CAP CER 100NF 50V 20% Z5U 0805	MAIN	BASIC
CV09	042416502261	CAP ELECT 22MF 50V 20%	MAIN	BASIC
CV10	042414254761	CAP ELECT 47MF 25V 20%	MAIN	BASIC
CV11	040067041081	CAP CER 100NF 50V 20% Z5U 0805	MAIN	BASIC
CV12	042416501051	CAP ELECT 1MF 50V 20%	MAIN	BASIC
CV13	042416501051	CAP ELECT 1MF 50V 20%	MAIN	BASIC
CV14	042416501051	CAP ELECT 1MF 50V 20%	MAIN	BASIC
CV15	042416501051	CAP ELECT 1MF 50V 20%	MAIN	BASIC
CV16	040732041081	CAP CER 100PF 50V 5% COG 0805	MAIN	BASIC
CV17	042416501051	CAP ELECT 1MF 50V 20%	MAIN	BASIC
CV18	040067041081	CAP CER 100NF 50V 20% Z5U 0805	MAIN	BASIC
CV19	040067041081	CAP CER 100NF 50V 20% Z5U 0805	MAIN	BASIC
CV20	040067041081	CAP CER 100NF 50V 20% Z5U 0805	MAIN	BASIC
CV21	040067041081	CAP CER 100NF 50V 20% Z5U 0805	MAIN	BASIC
CV22	040067041081	CAP CER 100NF 50V 20% Z5U 0805	MAIN	BASIC
CV23	040067041081	CAP CER 100NF 50V 20% Z5U 0805	MAIN	BASIC
CV25	040043447281	CAP CER 4.7NF 50V 10% X7R 0805	MAIN	BASIC
CV26	620013081041	CAP MKT 100NF 63V 5% 5MM	MAIN	BASIC
CV27	042414254761	CAP ELECT 47MF 25V 20%	MAIN	BASIC
CV28	040067041081	CAP CER 100NF 50V 20% Z5U 0805	MAIN	BASIC
CV30	040043447281	CAP CER 4.7NF 50V 10% X7R 0805	MAIN	BASIC
CV31	042446502251	CAP ELECT 2.2MF 50V 20%	MAIN	BASIC
CV32	042140161071	CAP ELECT 100MF 16V 20%	MAIN	BASIC
CV33	040067041081	CAP CER 100NF 50V 20% Z5U 0805	MAIN	BASIC
CV34	619005064741	CAP MKT 470NF 63V 10% 5MM	MAIN	BASIC
CV35	042194504751	CAP ELECT 4.7MF 50V 20%	MAIN	BASIC
CV36	042416501051	CAP ELECT 1MF 50V 20%	MAIN	BASIC
CV48	042416501051	CAP ELECT 1MF 50V 20%	MAIN	BASIC
CV73	042446501061	CAP ELECT 10MF 50V 20%	MAIN	BASIC
CV74	040732041061	CAP CER 100PF 50V 5% COG 0603	MAIN	BASIC
CV75	040732041061	CAP CER 100PF 50V 5% COG 0603	MAIN	BASIC
CV76	040732041061	CAP CER 100PF 50V 5% COG 0603	MAIN	BASIC
CV77	621004051001	CAP KT 100NF 250VDC10% 5-7.5MM	MAIN	BASIC
CV78	042446862251	CAP ELECT 2.2MF 250V 20%	MAIN	BASIC
CV80	042446862251	CAP ELECT 2.2MF 250V 20%	MAIN	BASIC
CV81	040040171021	CAP CER 1NF 2KV 10% BN	MAIN	BASIC
DD01	048000000021	DIODE RECT.600V 1.5A SOD-57	MAIN	BASIC
DD02	048210411001	DIODE GP.1N4148 DO-35	MAIN	BASIC
DD05	048000000021	DIODE RECT.600V 1.5A SOD-57	MAIN	BASIC
DD06	048000000011	DIODE RECT.BYD33D SOD-81	MAIN	BASIC
DD07	048000000011	DIODE RECT.BYD33D SOD-81	MAIN	BASIC
DP01	048321423201	DIODE RECT.1N4007 DO-41	MAIN	BASIC

POS.	CODE	DESCRIPTION	BOARD	FUNC.
DP02	048321423201	DIODE RECT.1N4007 DO-41	MAIN	BASIC
DP03	048321423201	DIODE RECT.1N4007 DO-41	MAIN	BASIC
DP04	048321423201	DIODE RECT.1N4007 DO-41	MAIN	BASIC
DP06	048000000021	DIODE RECT.BYV95C SOD-57	MAIN	BASIC
DP07	048210411001	DIODE GP.1N4148 DO-35	MAIN	BASIC
DP08	048000000331	DIODE RECT.BYW95C SOD-64	MAIN	BASIC
DP09	048540733021	DIODE ZNR.33V ZTK33B DO-35	MAIN	BASIC
DP10	048000000021	DIODE RECT.600V 1.5A SOD-57	MAIN	BASIC
DP11	048000000021	DIODE RECT.600V 1.5A SOD-57	MAIN	BASIC
DP12	048000000331	DIODE RECT.BYW95C SOD-64	MAIN	BASIC
DP81	608780002411	COIL FILTER 3.5*101.3H F.BEAD	MAIN	BASIC
DV02	048210411001	DIODE GP.1N4148 DO-35	MAIN	BASIC
DV03	048210411001	DIODE GP.1N4148 DO-35	MAIN	BASIC
DV04	048210411001	DIODE GP.1N4148 DO-35	MAIN	BASIC
DV70	048210411001	DIODE GP.1N4148 DO-35	MAIN	BASIC
DV71	048210411001	DIODE GP.1N4148 DO-35	MAIN	BASIC
DV72	048210411001	DIODE GP.1N4148 DO-35	MAIN	BASIC
DV73	048210411001	DIODE GP.1N4148 DO-35	MAIN	BASIC
DV77	048321423201	DIODE RECT.1N4007 DO-41	MAIN	BASIC
FP01	075110211030	FUSE HOLDER TK-79/B BLACK	MAIN	BASIC
ICV2	045000070291	IC STV5112	MAIN	BASIC
ICV2	013090008420	HEATS. 1 PT-90A CRT	MAIN	BASIC
IP01	045190000021	IC TDA16846 SMPS CONTROLLER	MAIN	BASIC
IP02	045238103051	IC LM317 1.5A ADJ V REG TO-220	MAIN	BASIC
IP02	013090008410	HEATS.2 PT90A LM317 (IA01-IP02-IP03)	MAIN	BASIC
IP03	045238103081	IC LM7805 5V1A VOLT REG TO-220	MAIN	BASIC
JC01	000100340600	WIRE TINNED COPPER NLT060	MAIN	BASIC
KD01	075100201010	CONN 4P HRZ W LOCK MALE 100HZ	MAIN	BASIC
KD02	002521517081	CABLE HOLDER 4 CIRCUIT	MAIN	BASIC
KP02	075100211781	CONN 2P VRT W/LOCK 7.5MM DEG	MAIN	BASIC
LP01	608000000221	COIL 10UH 5% 0.41A AXIAL FIXED	MAIN	BASIC
LP02	032050733961	RESISTOR W.W 3.3R 5W 10% 5MM	MAIN	BASIC
LS01	608980000101	COIL 12UH 5% 0.15A AXIAL FIXED	MAIN	BASIC
LS02	608980000101	COIL 12UH 5% 0.15A AXIAL FIXED	MAIN	BASIC
LS07	608980000101	COIL 12UH 5% 0.15A AXIAL FIXED	MAIN	BASIC
LT01	608080000751	COIL 22UH 5% 0.5A AXIAL FIXED	MAIN	BASIC
LV01	608000011011	COIL 10UH 1.4A AXL	MAIN	BASIC
LV02	608080000161	COIL 6.8UH 5% 0.175A AXIAL FIX	MAIN	BASIC
LV03	608980000121	COIL 4.7UH 5% AXIAL FIX	MAIN	BASIC
LV04	608980000121	COIL 4.7UH 5% AXIAL FIX	MAIN	BASIC
R001	030010610481	RESISTOR C.F 100K 1/8W 5% 0805	MAIN	BASIC
R002	030010612281	RESISTOR C.F 1.2K 1/8W 5% 0805	MAIN	BASIC
R012	030010647281	RESISTOR C.F 4.7K 1/8W 5% 0805	MAIN	BASIC
R013	030010647281	RESISTOR C.F 4.7K 1/8W 5% 0805	MAIN	BASIC
R026	030010647281	RESISTOR C.F 4.7K 1/8W 5% 0805	MAIN	BASIC
R027	030010647281	RESISTOR C.F 4.7K 1/8W 5% 0805	MAIN	BASIC

POS.	CODE	DESCRIPTION	BOARD	FUNC.
R044	030010610381	RESISTOR C.F 10K 1/8W 5% 0805	MAIN	BASIC
R045	030020610231	RESISTOR C.F 1K 1/4W 5%	MAIN	BASIC
R048	030010610181	RESISTOR C.F 100R 1/8W 5% 0805	MAIN	BASIC
R049	030010610181	RESISTOR C.F 100R 1/8W 5% 0805	MAIN	BASIC
RA01	030010633481	RESISTOR C.F 330K 1/8W 5% 0805	MAIN	BASIC
RA04	030010610381	RESISTOR C.F 10K 1/8W 5% 0805	MAIN	BASIC
RA05	030010633281	RESISTOR C.F 3.3K 1/8W 5% 0805	MAIN	BASIC
RA25	030010610481	RESISTOR C.F 100K 1/8W 5% 0805	MAIN	BASIC
RD01	030025615001	RESISTOR FUSIBLE 15R 1/4W 5%	MAIN	BASIC
RD02	030020668031	RESISTOR C.F 68R 1/4W 5%	MAIN	BASIC
RD04	030010647381	RESISTOR C.F 47K 1/8W 5% 0805	MAIN	BASIC
RD05	030140639021	RESISTOR C.F 39R 1/2W 5%	MAIN	BASIC
RD07	030108615511	RESISTOR M.O 0.22R 1W 5%	MAIN	BASIC
RD08	030025610011	RESISTOR FUSIBLE 10R 1/4W 5%	MAIN	BASIC
RD10	030055722811	RESISTOR FUSIBLE 0.22R 1/2W 5%	MAIN	BASIC
RD13	030010656221	RESISTOR FUSIBLE 5.6K 1W 5%	MAIN	BASIC
RD14	030020601221	RESISTOR M.O 1K 1W 5%	MAIN	BASIC
RD15	030050610211	RESISTOR C.F 1K 1/2W 5%	MAIN	BASIC
RD28	030050647111	RESISTOR C.F 470R 1/2W 5%	MAIN	BASIC
RP01	032050733961	RESISTOR W.W 3.3R 5W 10% 5MM	MAIN	BASIC
RP02	030010633381	RESISTOR C.F 33K 1/8W 5% 0805	MAIN	BASIC
RP03	030010656281	RESISTOR C.F 5.6K 1/8W 5% 0805	MAIN	BASIC
RP04	030010610381	RESISTOR C.F 10K 1/8W 5% 0805	MAIN	BASIC
RP05	030010611221	RESISTOR C.F 1M 1/4W 2%	MAIN	BASIC
RP06	030010639221	RESISTOR C.F 3.9M 1/4W 2%	MAIN	BASIC
RP07	030010610081	RESISTOR C.F 10R 1/8W 5% 0805	MAIN	BASIC
RP08	030010633381	RESISTOR C.F 33K 1/8W 5% 0805	MAIN	BASIC
RP09	030050647511	RESISTOR C.F 4.7M 1/2W 5% SFTY	MAIN	BASIC
RP10	032040633521	RES WW 33K 5W 15MM	MAIN	BASIC
RP11	030020615011	RESISTOR C.F 15R 1/4W 5%	MAIN	BASIC
RP17	030010633181	RESISTOR C.F 330R 1/8W 5% 0805	MAIN	BASIC
RP18	030010618281	RESISTOR C.F 1.8K 1/8W 5% 0805	MAIN	BASIC
RP19	030010610381	RESISTOR C.F 10K 1/8W 5% 0805	MAIN	BASIC
RP21	000100340600	WIRE TINNED COPPER NLT060	MAIN	BASIC
RP22	000100340600	WIRE TINNED COPPER NLT060	MAIN	BASIC
RP23	030010610281	RESISTOR C.F 1K 1/8W 5% 0805	MAIN	BASIC
RP25	000100340600	WIRE TINNED COPPER NLT060	MAIN	BASIC
RP30	030010610381	RESISTOR C.F 10K 1/8W 5% 0805	MAIN	BASIC
RP31	030010622181	RESISTOR C.F 220R 1/8W 5% 0805	MAIN	BASIC
RP32	030010610381	RESISTOR C.F 10K 1/8W 5% 0805	MAIN	BASIC
RP33	030010647281	RESISTOR C.F 4.7K 1/8W 5% 0805	MAIN	BASIC
RP61	030010610281	RESISTOR C.F 1K 1/8W 5% 0805	MAIN	BASIC
RP62	030010618481	RESISTOR C.F 180K 1/8W 5% 0805	MAIN	BASIC
RP63	030000627281	RESISTOR C.F 2.7K 1/8W 1% 0805	MAIN	BASIC
RS01	030010612381	RESISTOR C.F 12K 1/8W 5% 0805	MAIN	BASIC
RS02	030010612381	RESISTOR C.F 12K 1/8W 5% 0805	MAIN	BASIC

POS.	CODE	DESCRIPTION	BOARD	FUNC.
RS07	030010647181	RESISTOR C.F 470R 1/8W 5% 0805	MAIN	BASIC
RT01	030010647281	RESISTOR C.F 4.7K 1/8W 5% 0805	MAIN	BASIC
RT02	030010627381	RESISTOR C.F 27K 1/8W 5% 0805	MAIN	BASIC
RT05	030010622381	RESISTOR C.F 22K 1/8W 5% 0805	MAIN	BASIC
RT13	030010610181	RESISTOR C.F 100R 1/8W 5% 0805	MAIN	BASIC
RT14	030010610181	RESISTOR C.F 100R 1/8W 5% 0805	MAIN	BASIC
RV01	030010615181	RESISTOR C.F 150R 1/8W 5% 0805	MAIN	BASIC
RV02	030010610481	RESISTOR C.F 100K 1/8W 5% 0805	MAIN	BASIC
RV03	030010610081	RESISTOR C.F 10R 1/8W 5% 0805	MAIN	BASIC
RV04	030010610181	RESISTOR C.F 100R 1/8W 5% 0805	MAIN	BASIC
RV05	030010610281	RESISTOR C.F 1K 1/8W 5% 0805	MAIN	BASIC
RV06	030010675081	RESISTOR C.F 75R 1/8W 5% 0805	MAIN	BASIC
RV08	030010610281	RESISTOR C.F 1K 1/8W 5% 0805	MAIN	BASIC
RV09	030010633481	RESISTOR C.F 330K 1/8W 5% 0805	MAIN	BASIC
RV10	030010675081	RESISTOR C.F 75R 1/8W 5% 0805	MAIN	BASIC
RV11	030010675081	RESISTOR C.F 75R 1/8W 5% 0805	MAIN	BASIC
RV12	030010675081	RESISTOR C.F 75R 1/8W 5% 0805	MAIN	BASIC
RV13	030010675081	RESISTOR C.F 75R 1/8W 5% 0805	MAIN	BASIC
RV14	030010647381	RESISTOR C.F 47K 1/8W 5% 0805	MAIN	BASIC
RV15	030010610281	RESISTOR C.F 1K 1/8W 5% 0805	MAIN	BASIC
RV16	030010627181	RESISTOR C.F 270R 1/8W 5% 0805	MAIN	BASIC
RV17	030010627181	RESISTOR C.F 270R 1/8W 5% 0805	MAIN	BASIC
RV18	030010627181	RESISTOR C.F 270R 1/8W 5% 0805	MAIN	BASIC
RV19	030010610281	RESISTOR C.F 1K 1/8W 5% 0805	MAIN	BASIC
RV20	030010610281	RESISTOR C.F 1K 1/8W 5% 0805	MAIN	BASIC
RV21	030010610281	RESISTOR C.F 1K 1/8W 5% 0805	MAIN	BASIC
RV22	030010656281	RESISTOR C.F 5.6K 1/8W 5% 0805	MAIN	BASIC
RV23	030010618381	RESISTOR C.F 18K 1/8W 5% 0805	MAIN	BASIC
RV24	030010610381	RESISTOR C.F 10K 1/8W 5% 0805	MAIN	BASIC
RV25	030010622381	RESISTOR C.F 22K 1/8W 5% 0805	MAIN	BASIC
RV26	030010656381	RESISTOR C.F 56K 1/8W 5% 0805	MAIN	BASIC
RV27	030010647181	RESISTOR C.F 470R 1/8W 5% 0805	MAIN	BASIC
RV28	030010615381	RESISTOR C.F 15K 1/8W 5% 0805	MAIN	BASIC
RV29	030010682281	RESISTOR C.F 8.2K 1/8W 5% 0805	MAIN	BASIC
RV30	030010622281	RESISTOR C.F 2.2K 1/8W 5% 0805	MAIN	BASIC
RV31	030010622281	RESISTOR C.F 2.2K 1/8W 5% 0805	MAIN	BASIC
RV32	030020656131	RESISTOR C.F 560R 1/4W 5%	MAIN	BASIC
RV33	030010610181	RESISTOR C.F 100R 1/8W 5% 0805	MAIN	BASIC
RV34	030010610181	RESISTOR C.F 100R 1/8W 5% 0805	MAIN	BASIC
RV35	030010615181	RESISTOR C.F 150R 1/8W 5% 0805	MAIN	BASIC
RV48	030010675081	RESISTOR C.F 75R 1/8W 5% 0805	MAIN	BASIC
RV50	030010622181	RESISTOR C.F 220R 1/8W 5% 0805	MAIN	BASIC
RV73	030010612261	RESISTOR C.F 1.2K 1/10W5% 0603	MAIN	BASIC
RV74	030010612261	RESISTOR C.F 1.2K 1/10W5% 0603	MAIN	BASIC
RV75	030010612261	RESISTOR C.F 1.2K 1/10W5% 0603	MAIN	BASIC
RV76	030010647281	RESISTOR C.F 4.7K 1/8W 5% 0805	MAIN	BASIC

POS.	CODE	DESCRIPTION	BOARD	FUNC.
RV77	040052100261	CAP CER 220PF 0603	MAIN	BASIC
RV78	030108682311	RES M O 82K 1W 5%	MAIN	BASIC
RV79	030108682311	RES M O 82K 1W 5%	MAIN	BASIC
RV80	030108682311	RES M O 82K 1W 5%	MAIN	BASIC
RV81	030010647161	RESISTOR C.F 470R 1/10W5% 0603	MAIN	BASIC
RV82	030010647281	RESISTOR C.F 4.7K 1/8W 5% 0805	MAIN	BASIC
RV83	030010647161	RESISTOR C.F 470R 1/10W5% 0603	MAIN	BASIC
RV84	030010647281	RESISTOR C.F 4.7K 1/8W 5% 0805	MAIN	BASIC
RV85	030010647161	RESISTOR C.F 470R 1/10W5% 0603	MAIN	BASIC
RV86	030050615211	RESISTOR C.F 1.5K 1/2W 5%	MAIN	BASIC
RV87	030050615211	RESISTOR C.F 1.5K 1/2W 5%	MAIN	BASIC
RV88	030050615211	RESISTOR C.F 1.5K 1/2W 5%	MAIN	BASIC
RV89	030020615231	RESISTOR C.F 1.5K 1/4W 5%	MAIN	BASIC
RV91	030020622511	RESISTOR C.F 2.2M 1/4W 5%	MAIN	BASIC
RV92	030020615431	RESISTOR C.F 150K 1/4W 5%	MAIN	BASIC
RV94	030020647031	RESISTOR C.F 47R 1/4W 5%	MAIN	BASIC
RV96	030010647061	RESISTOR C.F 47R 1/10W5% 0603	MAIN	BASIC
RV97	030010647061	RESISTOR C.F 47R 1/10W5% 0603	MAIN	BASIC
S001	002092000020	CABLE 6P 6MM STRIPPED 38CM	MAIN	BASIC
S001	002521517061	CABLE HOLDER 6 CIRCUIT	MAIN	BASIC
S002	002092000000	CABLE 3P 39CM	MAIN	BASIC
S002	002521517081	CABLE HOLDER 4 CIRCUIT	MAIN	BASIC
S003	075020800031	SOCKET CRT NARROW NECK 29MM	MAIN	BASIC
SC01	075030511100	CONN 5P VRT W/LOCK	MAIN	BASIC
SD21	075030211001	CONN 2P VRT W/LOCK 5MM VERT	MAIN	BASIC
SV01	002521517061	CABLE HOLDER 6 CIRCUIT	MAIN	BASIC
TA01	046246022281	TRS.BC547B TO-92	MAIN	BASIC
TC01	608280001981	COIL VARIABLE 44MHZ 39PF	MAIN	BASIC
TD01	046926111351	TRS.BC639 TO-92	MAIN	BASIC
TD02	013090008110	HEATS.4 PT90A(ID41-ID21-ID02)	MAIN	BASIC
TP01	013090008320	HEATS. 3 PT-92 (BUZ90A)	MAIN	BASIC
TP02	046246022281	TRS.BC547B TO-92	MAIN	BASIC
TP03	046001140001	TRS.BD140-16 TO-126	MAIN	BASIC
TP04	046246022281	TRS.BC547B TO-92	MAIN	BASIC
TV01	046246022281	TRS.BC547B TO-92	MAIN	BASIC
WD01	602300033071	TRF.HRZ.DRIVE PT92	MAIN	BASIC
0031	000100340600	WIRE TINNED COPPER NLT060	MAIN	BASIC NO EPG
0032	000100340600	WIRE TINNED COPPER NLT060	MAIN	BASIC NO EPG
0035	000100340600	WIRE TINNED COPPER NLT060	MAIN	BASIC NO EPG
0038	000100340600	WIRE TINNED COPPER NLT060	MAIN	BASIC NO EPG
0039	000100340600	WIRE TINNED COPPER NLT060	MAIN	BASIC NO EPG
0042	000100340600	WIRE TINNED COPPER NLT060	MAIN	BASIC NO EPG
0051	000100340600	WIRE TINNED COPPER NLT060	MAIN	BASIC NO EPG
0059	000100340600	WIRE TINNED COPPER NLT060	MAIN	BASIC NO EPG
0060	000100340600	WIRE TINNED COPPER NLT060	MAIN	BASIC NO EPG
0063	000100340600	WIRE TINNED COPPER NLT060	MAIN	BASIC NO EPG

POS.	CODE	DESCRIPTION	BOARD	FUNC.
0065	000100340600	WIRE TINNED COPPER NLT060	MAIN	BASIC NO EPG
0070	000100340600	WIRE TINNED COPPER NLT060	MAIN	BASIC NO EPG
C022	040031042281	CAP CER 22PF 50V 5% COG 0805	MAIN	BASIC NO EPG
C023	040031042281	CAP CER 22PF 50V 5% COG 0805	MAIN	BASIC NO EPG
C025	042416501051	CAP ELECT 1MF 50V 20%	MAIN	BASIC NO EPG
C101	000100340600	WIRE TINNED COPPER NLT060	MAIN	BASIC NO EPG
D001	048210411001	DIODE GP.1N4148 DO-35	MAIN	BASIC NO EPG
D002	048210411001	DIODE GP.1N4148 DO-35	MAIN	BASIC NO EPG
IC02	045000001041	IC PCF8598C-2 / ST24C08	MAIN	BASIC NO EPG
LP04	608000000011	COIL 10UH 10% 0.16A AXIAL FIX	MAIN	BASIC NO EPG
R016	030010610281	RESISTOR C.F 1K 1/8W 5% 0805	MAIN	BASIC NO EPG
R017	030010610281	RESISTOR C.F 1K 1/8W 5% 0805	MAIN	BASIC NO EPG
R018	030010610281	RESISTOR C.F 1K 1/8W 5% 0805	MAIN	BASIC NO EPG
R019	030010647181	RESISTOR C.F 470R 1/8W 5% 0805	MAIN	BASIC NO EPG
R028	030010647281	RESISTOR C.F 4.7K 1/8W 5% 0805	MAIN	BASIC NO EPG
R032	030010647281	RESISTOR C.F 4.7K 1/8W 5% 0805	MAIN	BASIC NO EPG
R052	030010610381	RESISTOR C.F 10K 1/8W 5% 0805	MAIN	BASIC NO EPG
X001	049030000461	CRYSTAL 4.000 MHZ HC49U	MAIN	BASIC NO EPG
TU01	616800020001	TUNER PLL CTT5020E/CTF5510	MAIN	BASIC NO NTSC/T.TUN.
DT01	000100340600	WIRE TINNED COPPER NLT060	MAIN	BASIC NO SECAM L/L'
0109	000100340600	WIRE TINNED COPPER NLT060	MAIN	DOLBY STEREO/110DEG
0110	000100340600	WIRE TINNED COPPER NLT060	MAIN	DOLBY STEREO/110DEG
0118	000100340600	WIRE TINNED COPPER NLT060	MAIN	DOLBY STEREO/110DEG
CA21	040044081881	CAP CER 470NF 16V 10% X7R 0805	MAIN	DOLBY STEREO/110DEG
CA22	040044081881	CAP CER 470NF 16V 10% X7R 0805	MAIN	DOLBY STEREO/110DEG
CA25	040044081881	CAP CER 470NF 16V 10% X7R 0805	MAIN	DOLBY STEREO/110DEG
CA26	042440354771	CAP ELECT 470MF 35V 20%	MAIN	DOLBY STEREO/110DEG
HS02	075100211130	CONN 2P IN-LINE VRT W/LOCK WIDE	MAIN	DOLBY STEREO/110DEG
IA02	045000001231	IC TDA7494	MAIN	DOLBY STEREO/110DEG
ICM1	45411000111	IC MSP3411G-PS DIP52PIN	MAIN	DOLBY STEREO/110DEG
RA20	030010633281	RESISTOR C.F 3.3K 1/8W 5% 0805	MAIN	DOLBY STEREO/110DEG
RA21	030010610381	RESISTOR C.F 10K 1/8W 5% 0805	MAIN	DOLBY STEREO/110DEG
RA22	030010633281	RESISTOR C.F 3.3K 1/8W 5% 0805	MAIN	DOLBY STEREO/110DEG
RA23	030010633481	RESISTOR C.F 330K 1/8W 5% 0805	MAIN	DOLBY STEREO/110DEG
0109	000100340600	WIRE TINNED COPPER NLT060	MAIN	DOLBY STEREO/90DEG
0110	000100340600	WIRE TINNED COPPER NLT060	MAIN	DOLBY STEREO/90DEG
0118	000100340600	WIRE TINNED COPPER NLT060	MAIN	DOLBY STEREO/90DEG
CA21	040044081881	CAP CER 470NF 16V 10% X7R 0805	MAIN	DOLBY STEREO/90DEG
CA22	040044081881	CAP CER 470NF 16V 10% X7R 0805	MAIN	DOLBY STEREO/90DEG
CA25	040044081881	CAP CER 470NF 16V 10% X7R 0805	MAIN	DOLBY STEREO/90DEG
CA26	042440354771	CAP ELECT 470MF 35V 20%	MAIN	DOLBY STEREO/90DEG
HS02	075100211130	CONN 2P IN-LINE VRT W/LOCK WIDE	MAIN	DOLBY STEREO/90DEG
IA02	045000001231	IC TDA7494	MAIN	DOLBY STEREO/90DEG
ICM1	045411000111	IC MSP3411G-PS DIP52PIN	MAIN	DOLBY STEREO/90DEG
RA20	030010633281	RESISTOR C.F 3.3K 1/8W 5% 0805	MAIN	DOLBY STEREO/90DEG
RA21	030010647281	RESISTOR C.F 4.7K 1/8W 5% 0805	MAIN	DOLBY STEREO/90DEG

POS.	CODE	DESCRIPTION	BOARD	FUNC.
RA22	030010633281	RESISTOR C.F 3.3K 1/8W 5% 0805	MAIN	DOLBY STEREO/90DEG
RA23	030010633481	RESISTOR C.F 330K 1/8W 5% 0805	MAIN	DOLBY STEREO/90DEG
CS09	040752041081	CAP CER 1NF 50V 10% X7R 0805	MAIN	DOUBLE SCART
CS10	040752041081	CAP CER 1NF 50V 10% X7R 0805	MAIN	DOUBLE SCART
CS15	040052044861	CAP CER 470PF 50V 5% COG 0603	MAIN	DOUBLE SCART
CS15	040052044861	CAP CER 470PF 50V 5% COG 0603	MAIN	DOUBLE SCART
RS11	030010610481	RESISTOR C.F 100K 1/8W 5% 0805	MAIN	DOUBLE SCART
RS12	030010610481	RESISTOR C.F 100K 1/8W 5% 0805	MAIN	DOUBLE SCART
C535	040052043381	CAP CER 330NF 50V20-80%Y5V0805	MAIN	DOUBLE SCART
C536	040052043381	CAP CER 330NF 50V20-80%Y5V0805	MAIN	DOUBLE SCART
C537	042416502261	CAP ELECT 22MF 50V 20%	MAIN	DOUBLE SCART
C538	042416502261	CAP ELECT 22MF 50V 20%	MAIN	DOUBLE SCART
CS05	040752041081	CAP CER 1NF 50V 10% X7R 0805	MAIN	DOUBLE SCART
CS06	040752041081	CAP CER 1NF 50V 10% X7R 0805	MAIN	DOUBLE SCART
LS01	608980000111	COIL 1UH 5% 0.27A AXIAL FIXED	MAIN	DOUBLE SCART
LS05	608980000101	COIL 12UH 5% 0.15A AXIAL FIXED	MAIN	DOUBLE SCART
LS06	608980000101	COIL 12UH 5% 0.15A AXIAL FIXED	MAIN	DOUBLE SCART
LS10	608980000111	COIL 1UH 5% 0.27A AXIAL FIXED	MAIN	DOUBLE SCART
RS05	030020647131	RESISTOR C.F 470R 1/4W 5%	MAIN	DOUBLE SCART
RS06	030020647131	RESISTOR C.F 470R 1/4W 5%	MAIN	DOUBLE SCART
RV49	030010675081	RESISTOR C.F 75R 1/8W 5% 0805	MAIN	DOUBLE SCART
RV58	030010675081	RESISTOR C.F 75R 1/8W 5% 0805	MAIN	DOUBLE SCART
RV59	030010610281	RESISTOR C.F 1K 1/8W 5% 0805	MAIN	DOUBLE SCART
RV60	030010610181	RESISTOR C.F 100R 1/8W 5% 0805	MAIN	DOUBLE SCART
TV62	046246022281	TRS.BC547B TO-92	MAIN	DOUBLE SCART
SS02	075040210071	SOCKET SCART DOUBLE PT90A	MAIN	DOUBLE SCRT
D003	048210411001	DIODE GP.1N4148 DO-35	MAIN	DOUBLESCART NO EPG
R030	030010647281	RESISTOR C.F 4.7K 1/8W 5% 0805	MAIN	DOUBLESCART NO EPG
R031	030010682281	RESISTOR C.F 8.2K 1/8W 5% 0805	MAIN	DOUBLESCART NO EPG
D005	048210411001	DIODE GP.1N4148 DO-35	MAIN	ECO-SWITCH
POW1	081000000121	SWITCH POWER ALPS ECO	MAIN	ECO-SWITCH
R011	030020647231	RESISTOR C.F 4.7K 1/4W 5%	MAIN	ECO-SWITCH
R041	030010633281	RESISTOR C.F 3.3K 1/8W 5% 0805	MAIN	ECO-SWITCH
T003	046246022281	TRS.BC547B TO-92	MAIN	ECO-SWITCH
T004	046247018001	TRS.BC337 TO-92	MAIN	ECO-SWITCH
R009	030010647281	RESISTOR C.F 4.7K 1/8W 5% 0805	MAIN	ECO-SWITCH NO EPG
1PCB	614000020470	PCB(00TA047B)EPG PT90A	EPG	EPG
C901	040067041081	CAP CER 100NF 50V 20% Z5U 0805	EPG	EPG
C902	040031042281	CAP CER 22PF 50V 5% COG 0805	EPG	EPG
C903	042424504741	CAP ELECT 0.47F 5.5V 20% GOLD	EPG	EPG
C904	040067041081	CAP CER 100NF 50V 20% Z5U 0805	EPG	EPG
C905	040052044681	CAP CER 47PF 50V 5% COG 0805	EPG	EPG
C906	040052044681	CAP CER 47PF 50V 5% COG 0805	EPG	EPG
C908	040732041081	CAP CER 100PF 50V 5% COG 0805	EPG	EPG
C909	040067041081	CAP CER 100NF 50V 20% Z5U 0805	EPG	EPG
C910	040730022281	CAP CER 2.2NF 50V 10% X7R 0805	EPG	EPG

POS.	CODE	DESCRIPTION	BOARD	FUNC.
C911	040031042281	CAP CER 22PF 50V 5% COG 0805	EPG	EPG
C912	040043447281	CAP CER 4.7NF 50V 10% X7R 0805	EPG	EPG
C913	040031042281	CAP CER 22PF 50V 5% COG 0805	EPG	EPG
C914	040043447281	CAP CER 4.7NF 50V 10% X7R 0805	EPG	EPG
C916	040067041081	CAP CER 100NF 50V 20% Z5U 0805	EPG	EPG
C917	042140161071	CAP ELECT 100MF 16V 20%	EPG	EPG
C918	040067041081	CAP CER 100NF 50V 20% Z5U 0805	EPG	EPG
C919	040067041081	CAP CER 100NF 50V 20% Z5U 0805	EPG	EPG
C920	040052044881	CAP CER 470PF 50V 5% COG 0805	EPG	EPG
C921	040054043361	CAP CER 33PF 50V 5% COG 0603	EPG	EPG
C922	040052044881	CAP CER 470PF 50V 5% COG 0805	EPG	EPG
C976	040044081881	CAP CER 470NF 16V 10% X7R 0805	EPG	EPG
D902	048110411001	DIODE GP.LL4148 SOD80 MINIMELF	EPG	EPG
D903	048110411001	DIODE GP.LL4148 SOD80 MINIMELF	EPG	EPG
D904	002 090 102 011	CABLE R/C EXTENDER EYE SV-1010	EPG	EPG
D905	048110411001	DIODE GP.LL4148 SOD80 MINIMELF	EPG	EPG
D906	048110411001	DIODE GP LI4148 SOD80 MINIMELF	EPG	EPG
D907	048110411001	DIODE GP LI4148 SOD80 MINIMELF	EPG	EPG
D908	048110411001	DIODE GP LI4148 SOD80 MINIMELF	EPG	EPG
I901	045000001591	LOW POWER 5V, 512x8 SRAM	EPG	EPG
I902	045088343831	IC 27C02001-10FI EPROM	EPG	EPG
I902	075013220001	SOCKET IC 32P DIP-32	EPG	EPG
I902	045088344871	IC M27C2001-10BI OTP EPROM	EPG	EPG
I903	045001100011	IC ST92R195B ROMLESS	EPG	EPG
I907	045018841381	IC PCF8593 REAL TIME CLOCK	EPG	EPG
I909	045000001481	IC TL7757ILP	EPG	EPG
L901	608000000011	COIL 10UH 10% 0.16A AXIAL FIX	EPG	EPG
L902	608000000011	COIL 10UH 10% 0.16A AXIAL FIX	EPG	EPG
L903	608980000121	COIL 4.7UH 5% AXIAL FIX	EPG	EPG
R901	030010610381	RESISTOR C.F 10K 1/8W 5% 0805	EPG	EPG
R902	030010622281	RESISTOR C.F 2.2K 1/8W 5% 0805	EPG	EPG
R903	030010656281	RESISTOR C.F 5.6K 1/8W 5% 0805	EPG	EPG
R904	030010656281	RESISTOR C.F 5.6K 1/8W 5% 0805	EPG	EPG
R905	030010656281	RESISTOR C.F 5.6K 1/8W 5% 0805	EPG	EPG
R906	030010610381	RESISTOR C.F 10K 1/8W 5% 0805	EPG	EPG
R907	030010610381	RESISTOR C.F 10K 1/8W 5% 0805	EPG	EPG
R909	030010610381	RESISTOR C.F 10K 1/8W 5% 0805	EPG	EPG
R910	030010622381	RESISTOR C.F 22K 1/8W 5% 0805	EPG	EPG
R911	030010647281	RESISTOR C.F 4.7K 1/8W 5% 0805	EPG	EPG
R912	030010647281	RESISTOR C.F 4.7K 1/8W 5% 0805	EPG	EPG
R913	030010647281	RESISTOR C.F 4.7K 1/8W 5% 0805	EPG	EPG
R914	030010682281	RESISTOR C.F 8.2K 1/8W 5% 0805	EPG	EPG
R915	030010610281	RESISTOR C.F 1K 1/8W 5% 0805	EPG	EPG
R916	030010610381	RESISTOR C.F 10K 1/8W 5% 0805	EPG	EPG
R917	030010610381	RESISTOR C.F 10K 1/8W 5% 0805	EPG	EPG
R918	*030010610281*	*RESISTOR C.F 1K 1/8W 5% 0805*	EPG	EPG
R919	030010610281	RESISTOR C.F 1K 1/8W 5% 0805	EPG	EPG

POS.	CODE	DESCRIPTION	BOARD	FUNC.
R920	030010610281	RESISTOR C.F 1K 1/8W 5% 0805	EPG	EPG
R921	030010647181	RESISTOR C.F 470R 1/8W 5% 0805	EPG	EPG
R923	030010610381	RESISTOR C.F 10K 1/8W 5% 0805	EPG	EPG
R924	030010610081	RESISTOR C.F 10R 1/8W 5% 0805	EPG	EPG
R925	030010610381	RESISTOR C.F 10K 1/8W 5% 0805	EPG	EPG
R927	030010610261	RESISTOR C.F 1K 1/10W5% 0603	EPG	EPG
R928	030010618381	RESISTOR C.F 18K 1/8W 5% 0805	EPG	EPG
R929	030010618381	RESISTOR C.F 18K 1/8W 5% 0805	EPG	EPG
R931	030010610281	RESISTOR C.F 1K 1/8W 5% 0805	EPG	EPG
R933	030010647281	RESISTOR C.F 4.7K 1/8W 5% 0805	EPG	EPG
R934	030010610381	RESISTOR C.F 10K 1/8W 5% 0805	EPG	EPG
S911	075000411001	CONN 2P 90DEG.HEADER 2.54MM	EPG	EPG
S912	075000411011	CONN 5P 90DEG.HEADER 2.54MM	EPG	EPG
S913	075000411021	CONN 7P 90DEG.HEADER 2.54MM	EPG	EPG
S914	075000411011	CONN 5P 90DEG.HEADER 2.54MM	EPG	EPG
S915	075000411001	CONN 2P 90DEG.HEADER 2.54MM	EPG	EPG
S916	075000411011	CONN 5P 90DEG.HEADER 2.54MM	EPG	EPG
S917	075000411001	CONN 2P 90DEG.HEADER 2.54MM	EPG	EPG
T900	046246022281	TRS.BC547B TO-92	EPG	EPG
T901	046926111351	TRS.BC639 TO-92	EPG	EPG
T902	046246022281	TRS.BC547B TO-92	EPG	EPG
X901	049030000351	CRYSTAL 32.768KHZ (MU-155)	EPG	EPG
X902	049030000461	CRYSTAL 4.000 MHZ HC49U	EPG	EPG
0138	000100340600	WIRE TINNED COPPER NLT060 - 15mm	MAIN	EPG
C101	042414254761	CAP ELECT 47MF 25V 20%	MAIN	EPG
C102	042414254761	CAP ELECT 47MF 25V 20%	MAIN	EPG
IC02	045000280001	IC M24C64 64KBIT SERIAL I_C EEPRM	MAIN	EPG
R101	030010610181	RESISTOR C.F 100R 1/8W 5% 0805	MAIN	EPG
R102	030010622281	RESISTOR C.F 2.2K 1/8W 5% 0805	MAIN	EPG
R103	030010622381	RESISTOR C.F 22K 1/8W 5% 0805	MAIN	EPG
R104	030010622381	RESISTOR C.F 22K 1/8W 5% 0805	MAIN	EPG
R105	030010622281	RESISTOR C.F 2.2K 1/8W 5% 0805	MAIN	EPG
SS11	075030511100	CONN 5P VRT W/LOCK	MAIN	EPG
T101	046246022281	TRS.BC547B TO-92	MAIN	EPG
T102	046246022281	TRS.BC547B TO-92	MAIN	EPG
RH07	030010647981	RESISTOR C.F 4.7R 1/8W 5% 0805	MAIN	H.PHONE
RH08	030010647981	RESISTOR C.F 4.7R 1/8W 5% 0805	MAIN	H.PHONE
CH10	040752041081	CAP CER 1NF 50V 10% X7R 0805	MAIN	HEADPHONE MONO
RH06	030010610181	RESISTOR C.F 100R 1/8W 5% 0805	MAIN	HEADPHONE MONO
SH03	075016420041	SOCKET HEADPHONE MONO	MAIN	HEADPHONE MONO
0067	000100340600	WIRE TINNED COPPER NLT060	MAIN	HEADPHONE STEREO
0068	000100340600	WIRE TINNED COPPER NLT060	MAIN	HEADPHONE STEREO
0076	000100340600	WIRE TINNED COPPER NLT060	MAIN	HEADPHONE STEREO
0078	000100340600	WIRE TINNED COPPER NLT060	MAIN	HEADPHONE STEREO
C504	040752041081	CAP CER 1NF 50V 10% X7R 0805	MAIN	HEADPHONE STEREO
C505	040044081881	CAP CER 470NF 16V 10% X7R 0805	MAIN	HEADPHONE STEREO

POS.	CODE	DESCRIPTION	BOARD	FUNC.
C506	040044081881	CAP CER 470NF 16V 10% X7R 0805	MAIN	HEADPHONE STEREO
C507	040752041081	CAP CER 1NF 50V 10% X7R 0805	MAIN	HEADPHONE STEREO
CH01	042140161071	CAP ELECT 100MF 16V 20%	MAIN	HEADPHONE STEREO
CH02	040067041361	CAP CER 100NF 25V 20% 0603	MAIN	HEADPHONE STEREO
CH03	040067041361	CAP CER 100NF 25V 20% 0603	MAIN	HEADPHONE STEREO
CH04	042414254761	CAP ELECT 47MF 25V 20%	MAIN	HEADPHONE STEREO
CH05	042414254761	CAP ELECT 47MF 25V 20%	MAIN	HEADPHONE STEREO
CH06	042414254761	CAP ELECT 47MF 25V 20%	MAIN	HEADPHONE STEREO
CH07	042414254761	CAP ELECT 47MF 25V 20%	MAIN	HEADPHONE STEREO
CH08	040752041081	CAP CER 1NF 50V 10% X7R 0805	MAIN	HEADPHONE STEREO
CH09	040752041081	CAP CER 1NF 50V 10% X7R 0805	MAIN	HEADPHONE STEREO
CH10	030010600081	RESISTOR C.F 0R 1/8W 5% 0805	MAIN	HEADPHONE STEREO
IH01	045000001241	IC TDA2822M DUAL POWER AMP	MAIN	HEADPHONE STEREO
LH01	608080000051	COIL 22UH 5% 0.1A AXIAL FIXED	MAIN	HEADPHONE STEREO
LH02	608080000051	COIL 22UH 5% 0.1A AXIAL FIXED	MAIN	HEADPHONE STEREO
RH01	030025610011	RESISTOR FUSIBLE 10R 1/4W 5%	MAIN	HEADPHONE STEREO
RH02	030020633231	RESISTOR C.F 3.3K 1/4W 5%	MAIN	HEADPHONE STEREO
RH03	030020633231	RESISTOR C.F 3.3K 1/4W 5%	MAIN	HEADPHONE STEREO
RH04	030010656181	RESISTOR C.F 560R 1/8W 5% 0805	MAIN	HEADPHONE STEREO
RH05	030010656181	RESISTOR C.F 560R 1/8W 5% 0805	MAIN	HEADPHONE STEREO
RH06	030010600081	RESISTOR C.F 0R 1/8W 5% 0805	MAIN	HEADPHONE STEREO
SH03	075016420011	SOCKET HEADPHONE STR	MAIN	HEADPHONE STEREO
FV01	037720007821	FILTER TRAP 6.0MHZ TPS 6.0MB	MAIN	I
SA01	037790007881	FILTER SAW J1956M I MONO INTCR	MAIN	I
0133	000100340600	WIRE TINNED COPPER NLT060-12.5mm	MAIN	MONO
C718	030010600061	RESISTOR C.F 0R 1/10W 5% 0603	MAIN	MONO
JA08	000100340600	WIRE TINNED COPPER NLT060	MAIN	MONO
0071	000100340600	WIRE TINNED COPPER NLT060	MAIN	MONO
0079	000100340600	WIRE TINNED COPPER NLT060	MAIN	MONO
0107	000100340600	WIRE TINNED COPPER NLT060	MAIN	MONO
0116	000100340600	WIRE TINNED COPPER NLT060	MAIN	MONO
0149	000100340600	WIRE TINNED COPPER NLT060	MAIN	MONO
0150	000100340600	WIRE TINNED COPPER NLT060	MAIN	MONO
0153	000100340600	WIRE TINNED COPPER NLT060	MAIN	MONO
HS03	075100211130	CONN 2P IN-LINE VRT W/LOCK WIDE	MAIN	MONO
IA01	045000001231	IC TDA7494	MAIN	MONO
JA01	000100340600	WIRE TINNED COPPER NLT060	MAIN	MONO
JA02	000100340600	WIRE TINNED COPPER NLT060	MAIN	MONO
JS01	030010600081	RESISTOR C.F 0R 1/8W 5% 0805	MAIN	MONO
JS02	000100340600	WIRE TINNED COPPER NLT060	MAIN	MONO
JS03	030010600081	RESISTOR C.F 0R 1/8W 5% 0805	MAIN	MONO
JS04	030010600061	RESISTOR C.F 0R 1/10W 5% 0603	MAIN	MONO
RP12	030010656281	RESISTOR C.F 5.6K 1/8W 5% 0805	MAIN	MONO
RT03	030010610381	RESISTOR C.F 10K 1/8W 5% 0805	MAIN	MONO
RT04	030010610381	RESISTOR C.F 10K 1/8W 5% 0805	MAIN	MONO
RV35	030010633281	RESISTOR C.F 3.3K 1/8W 5% 0805	MAIN	MONO

POS.	CODE	DESCRIPTION	BOARD	FUNC.
RV56	030010610381	RESISTOR C.F 10K 1/8W 5% 0805	MAIN	MONO
VAP1	611380012021	TRIMPOT 2K 0.1W 30% V-ADJ 5/5	MAIN	MONO
IC01	045000002531	IC ST92195MT01_V1	MAIN	MONO 1P TXT NO EPG
JA04	000100340600	WIRE TINNED COPPER NLT060 - 10mm	MAIN	MONO 2 HOPAR..
IC01	045000004531	IC ST92185MT00_V1	MAIN	MONO N-TXT NO EPG
0018	000100340600	WIRE TINNED COPPER NLT060	MAIN	NTSC
0019	000100340600	WIRE TINNED COPPER NLT060	MAIN	NTSC
0040	000100340600	WIRE TINNED COPPER NLT060	MAIN	NTSC
0058	000100340600	WIRE TINNED COPPER NLT060	MAIN	NTSC
0062	000100340600	WIRE TINNED COPPER NLT060	MAIN	NTSC
0102	000100340600	WIRE TINNED COPPER NLT060	MAIN	NTSC
0104	000100340600	WIRE TINNED COPPER NLT060	MAIN	NTSC
0106	000100340600	WIRE TINNED COPPER NLT060	MAIN	NTSC
BP01	047013204011	TRIAC BT137-600 T-220	MAIN	NTSC
C002	040044081881	CAP CER 470NF 16V 10% X7R 0805	MAIN	NTSC
C021	040732041081	CAP CER 100PF 50V 5% COG 0805	MAIN	NTSC
CP30	042446501061	CAP ELECT 10MF 50V 20%	MAIN	NTSC
CP62	042414631051	CAP ELECT 1MF 63V 20%	MAIN	NTSC
CV37	040730014081	CAP CER 10NF 50V 10% X7R 0805	MAIN	NTSC
CV38	040730014081	CAP CER 10NF 50V 10% X7R 0805	MAIN	NTSC
CV39	040752041081	CAP CER 1NF 50V 10% X7R 0805	MAIN	NTSC
CV40	040067041081	CAP CER 100NF 50V 20% Z5U 0805	MAIN	NTSC
CV41	040730014081	CAP CER 10NF 50V 10% X7R 0805	MAIN	NTSC
CV41	040752041081	CAP CER 1NF 50V 10% X7R 0805	MAIN	NTSC
DP15	048000000011	DIODE RECT.BYD33D SOD-81	MAIN	NTSC
DP60	048100255121	DIODE ZNR.3V6 BZX55C DO-35	MAIN	NTSC
FV01	037730009231	FILTER CER 4.5MHZ TPSMB2	MAIN	NTSC
JV01	000100340600	WIRE TINNED COPPER NLT060	MAIN	NTSC
LV06	608280001031	COIL 1.5UH 5% AXIAL FIXED	MAIN	NTSC
LV07	608000000021	COIL 10UH 5% 0.16A AXIAL FIXED	MAIN	NTSC
R024	030010627381	RESISTOR C.F 27K 1/8W 5% 0805	MAIN	NTSC
R025	030010668281	RESISTOR C.F 6.8K 1/8W 5% 0805	MAIN	NTSC
R046	030010675081	RESISTOR C.F 75R 1/8W 5% 0805	MAIN	NTSC
R047	030010610281	RESISTOR C.F 1K 1/8W 5% 0805	MAIN	NTSC
R050	030000627281	RESISTOR C.F 2.7K 1/8W 1% 0805	MAIN	NTSC
RP27	030020622511	RESISTOR C.F 2.2M 1/4W 5%	MAIN	NTSC
RP28	030140633011	RESISTOR C.F 33R 1/6W 5%	MAIN	NTSC
RP50	030108668311	RESISTOR M.O 68K 1W 5%	MAIN	NTSC
RP51	030010668181	RESISTOR C.F 680R 1/8W 5% 0805	MAIN	NTSC
RP52	030010682181	RESISTOR C.F 820R 1/8W 5% 0805	MAIN	NTSC
RP53	030108150661	RESISTOR C.F 1.5M 1/8W 5% 0805	MAIN	NTSC
RP60	030010656281	RESISTOR C.F 5.6K 1/8W 5% 0805	MAIN	NTSC
RP65	030010610381	RESISTOR C.F 10K 1/8W 5% 0805	MAIN	NTSC
RP66	030010610281	RESISTOR C.F 1K 1/8W 5% 0805	MAIN	NTSC
RV37	030010656181	RESISTOR C.F 560R 1/8W 5% 0805	MAIN	NTSC
RV38	030010656181	RESISTOR C.F 560R 1/8W 5% 0805	MAIN	NTSC

POS.	CODE	DESCRIPTION	BOARD	FUNC.
RV39	030010647081	RESISTOR C.F 47R 1/8W 5% 0805	MAIN	NTSC
RV40	030010633281	RESISTOR C.F 3.3K 1/8W 5% 0805	MAIN	NTSC
RV53	030010675081	RESISTOR C.F 75R 1/8W 5% 0805	MAIN	NTSC
SW05	081101114021	SWITCH TACT SKHHLN MTLCONT6*6	MAIN	NTSC
T001	046246022281	TRS.BC547B TO-92	MAIN	NTSC
TP60	046246022281	TRS.BC547B TO-92	MAIN	NTSC
TP61	046246022281	TRS.BC547B TO-92	MAIN	NTSC
TV04	046001259011	TRS.BF370 TO-92	MAIN	NTSC
ZP01	048320605201	DIODE ZNR.12V BZX55C DO-35	MAIN	NTSC
CS47	040067041081	CAP CER 100NF 50V 20% Z5U 0805	MAIN	NTSC MONO
IS01	045000222221	IC HCF4052B	MAIN	NTSC MONO
RV51	030010683481	RESISTOR C.F 2.2R 1/8W 5% 0805	MAIN	NTSC MONO
SA01	037730017991	FILTER SAW M1962M	MAIN	NTSC MONO
C017	040052100281	CAP CER 220PF 50V 5% COG 0805	MAIN	NTSC NO EPG
C018	040730022281	CAP CER 2.2NF 50V 10% X7R 0805	MAIN	NTSC NO EPG
C019	030010600081	RESISTOR C.F 0R 1/8W 5% 0805	MAIN	NTSC NO EPG
IC01	045100001531	IC ST9294	MAIN	NTSC NO EPG
R007	030010647281	RESISTOR C.F 4.7K 1/8W 5% 0805	MAIN	NTSC NO EPG
ICM1	045000001581	IC MSP3435G D.SOUND PROCESSOR	MAIN	NTSC STEREO
RV54	030010675081	RESISTOR C.F 75R 1/8W 5% 0805	MAIN	NTSC STEREO
SA01	037730017981	FILTER SAW M3951M	MAIN	NTSC STEREO
SA02	037730017971	FILTER SAW M9260M	MAIN	NTSC STEREO
ICM1	045000001571	IC MSP3430G D.SOUND PROCESSOR	MAIN	NTSC STEREO+HPH
CS03	040752041081	CAP CER 1NF 50V 10% X7R 0805	MAIN	NTSC+DSCRT
CS04	040752041081	CAP CER 1NF 50V 10% X7R 0805	MAIN	NTSC+DSCRT
LS03	608980000101	COIL 12UH 5% 0.15A AXIAL FIXED	MAIN	NTSC+DSCRT
LS04	608980000101	COIL 12UH 5% 0.15A AXIAL FIXED	MAIN	NTSC+DSCRT
RS03	030010612381	RESISTOR C.F 12K 1/8W 5% 0805	MAIN	NTSC+DSCRT
RS04	030010612381	RESISTOR C.F 12K 1/8W 5% 0805	MAIN	NTSC+DSCRT
XV01	049030000501	CRYSTAL 4.433619 MHZ HC49U	MAIN	PAL
XV02	049030000551	CRYSTAL 3.575 MHZ HC49U	MAIN	PAL M
ICV1	045000002121	IC STV2246 PAL/NTSC PROCESSOR	MAIN	PAL MONO
CV24	049030000571	CRYSTAL 3.582 MHZ HC49U	MAIN	PAL N
ICV1	045000002131	IC STV2247 PAL/NTSC PROCESSOR	MAIN	PAL STEREO
0025	000100340600	WIRE TINNED COPPER NLT060	MAIN	PAL/SECAM
0026	000100340600	WIRE TINNED COPPER NLT060	MAIN	PAL/SECAM
0028	000100340600	WIRE TINNED COPPER NLT060	MAIN	PAL/SECAM
0029	000100340600	WIRE TINNED COPPER NLT060	MAIN	PAL/SECAM
0030	000100340600	WIRE TINNED COPPER NLT060	MAIN	PAL/SECAM
0043	000100340600	WIRE TINNED COPPER NLT060	MAIN	PAL/SECAM
DP60	000100340600	WIRE TINNED COPPER NLT060	MAIN	PAL/SECAM
JV02	000100340600	WIRE TINNED COPPER NLT060-10mm	MAIN	PAL/SECAM
JV03	000100340600	WIRE TINNED COPPER NLT060	MAIN	PAL/SECAM
R047	030010647261	RESISTOR C.F 4.7K 1/10W5% 0603	MAIN	PAL/SECAM
RP27	000100340600	WIRE TINNED COPPER NLT060	MAIN	PAL/SECAM
RP51	030010668181	RESISTOR C.F 680R 1/8W 5% 0805	MAIN	PAL/SECAM

POS.	CODE	DESCRIPTION	BOARD	FUNC.
RP52	030010600081	RESISTOR C.F 0R 1/8W 5% 0805	MAIN	PAL/SECAM
RP53	030010600081	RESISTOR C.F 0R 1/8W 5% 0805	MAIN	PAL/SECAM
RP66	030010600081	RESISTOR C.F 0R 1/8W 5% 0805	MAIN	PAL/SECAM
ICV1	045000002141	IC STV2248 PAL/NTSC/SECAM PROC	MAIN	PAL/SECAM STEREO/SECAM L MONO
C940	040730014081	CAP CER 10NF 50V 10% X7R 0805	EPG	PIP
C941	040730014081	CAP CER 10NF 50V 10% X7R 0805	EPG	PIP
C942	040730014081	CAP CER 10NF 50V 10% X7R 0805	EPG	PIP
C943	042446501061	CAP ELECT 10MF 50V 20%	EPG	PIP
C944	040730014081	CAP CER 10NF 50V 10% X7R 0805	EPG	PIP
C945	040031042281	CAP CER 22PF 50V 5% COG 0805	EPG	PIP
C946	040031042281	CAP CER 22PF 50V 5% COG 0805	EPG	PIP
C948	042416501051	CAP ELECT 1MF 50V 20%	EPG	PIP
C949	042446501061	CAP ELECT 10MF 50V 20%	EPG	PIP
C952	040067041081	CAP CER 100NF 50V 20% Z5U 0805	EPG	PIP
C953	042416501051	CAP ELECT 1MF 50V 20%	EPG	PIP
C954	040730014081	CAP CER 10NF 50V 10% X7R 0805	EPG	PIP
C955	042416501051	CAP ELECT 1MF 50V 20%	EPG	PIP
C956	040730014081	CAP CER 10NF 50V 10% X7R 0805	EPG	PIP
C970	042446501061	CAP ELECT 10MF 50V 20%	EPG	PIP
C971	040067041081	CAP CER 100NF 50V 20% Z5U 0805	EPG	PIP
C972	040730014081	CAP CER 10NF 50V 10% X7R 0805	EPG	PIP
C974	040067041081	CAP CER 100NF 50V 20% Z5U 0805	EPG	PIP
C975	040067041081	CAP CER 100NF 50V 20% Z5U 0805	EPG	PIP
I906	045000007771	IC L4931CV33 TO-220	EPG	PIP
I908	45100001991	IC SDA9589 PIP PROC.	EPG	PIP
L940	608000000011	COIL 10UH 10% 0.16A AXIAL FIX	EPG	PIP
L941	608000000011	COIL 10UH 10% 0.16A AXIAL FIX	EPG	PIP
X940	049030000701	CRYSTAL 20.250MHZ HC49U	EPG	PIP
C028	042140161071	CAP ELECT 100MF 16V 20%	MAIN	PUSH-THROUGH
IR01	609330001171	PREAMPLIFIER TSOP1138	MAIN	PUSH-THROUGH
LED1	048773809001	DIODE LED KLR114L RED 5MM	MAIN	PUSH-THROUGH
R003	030010627181	RESISTOR C.F 270R 1/8W 5% 0805	MAIN	PUSH-THROUGH
R004	030010633181	RESISTOR C.F 330R 1/8W 5% 0805	MAIN	PUSH-THROUGH
R005	030010682181	RESISTOR C.F 820R 1/8W 5% 0805	MAIN	PUSH-THROUGH
R006	030010612281	RESISTOR C.F 1.2K 1/8W 5% 0805	MAIN	PUSH-THROUGH
R008	030010610181	RESISTOR C.F 100R 1/8W 5% 0805	MAIN	PUSH-THROUGH
R039	030020633031	RESISTOR C.F 33R 1/4W 5%	MAIN	PUSH-THROUGH
R040	030010656181	RESISTOR C.F 560R 1/8W 5% 0805	MAIN	PUSH-THROUGH
SW01	081101114021	SWITCH TACT SKHHLN MTLCONT6*6	MAIN	PUSH-THROUGH
SW02	081101114021	SWITCH TACT SKHHLN MTLCONT6*6	MAIN	PUSH-THROUGH
SW03	081101114021	SWITCH TACT SKHHLN MTLCONT6*6	MAIN	PUSH-THROUGH
SW04	081101114021	SWITCH TACT SKHHLN MTLCONT6*6	MAIN	PUSH-THROUGH
D004	048210411001	DIODE GP.1N4148 DO-35	MAIN	SCART
LS09	608980000111	COIL 1UH 5% 0.27A AXIAL FIXED	MAIN	SCART
R042	030010682281	RESISTOR C.F 8.2K 1/8W 5% 0805	MAIN	SCART
R043	030010647281	RESISTOR C.F 4.7K 1/8W 5% 0805	MAIN	SCART

POS.	CODE	DESCRIPTION	BOARD	FUNC.
SS01	075040210051	SOCKET SCART 27'/28'/32'COMMON	MAIN	SCART
R010	030010647281	RESISTOR C.F 4.7K 1/8W 5% 0805	MAIN	SEC L/L'NO EPG
0152	000100340600	WIRE TINNED COPPER NLT060	MAIN	SECAM L/L'
CV50	040067041361	CAP CER 100NF 25V 20% 0603	MAIN	SECAM L/L'
CV50	040067041361	CAP CER 100NF 25V 20% 0603	MAIN	SECAM L/L'
0003	000100340600	WIRE TINNED COPPER NLT060	MAIN	SECAM L/L'
0152	000100340600	WIRE TINNED COPPER NLT060	MAIN	SECAM L/L'
CV01	042416501051	CAP ELECT 1MF 50V 20%	MAIN	SECAM L/L'
CV24	618014011041	CAP KT 100NF 63V 10% 5MM	MAIN	SECAM L/L'
CV42	040752041081	CAP CER 1NF 50V 10% X7R 0805	MAIN	SECAM L/L'
DT01	048210411001	DIODE GP.1N4148 DO-35	MAIN	SECAM L/L'
DV07	048322107001	DIODE GP.BA282&BA482 DO35/DO34	MAIN	SECAM L/L'
DV08	048322107001	DIODE GP.BA282&BA482 DO35/DO34	MAIN	SECAM L/L'
LV07	608000000021	COIL 10UH 5% 0.16A AXIAL FIXED	MAIN	SECAM L/L'
RT06	030010615381	RESISTOR C.F 15K 1/8W 5% 0805	MAIN	SECAM L/L'
RV41	030010610381	RESISTOR C.F 10K 1/8W 5% 0805	MAIN	SECAM L/L'
RV42	030010610381	RESISTOR C.F 10K 1/8W 5% 0805	MAIN	SECAM L/L'
RV44	030020668381	RESISTOR C.F 68K 1/8W 5% 0805	MAIN	SECAM L/L'
RV45	030010622281	RESISTOR C.F 2.2K 1/8W 5% 0805	MAIN	SECAM L/L'
RV46	030010622381	RESISTOR C.F 22K 1/8W 5% 0805	MAIN	SECAM L/L'
SA02	037730007771	FILTER SAW K9453M B/GD/KL/L'AU	MAIN	SECAM L/L'
TV02	046246022281	TRS.BC547B TO-92	MAIN	SECAM L/L'
TV03	046246022281	TRS.BC547B TO-92	MAIN	SECAM L/L'
0066	000100340600	WIRE TINNED COPPER NLT060	MAIN	SECOND SCART
0082	000100340600	WIRE TINNED COPPER NLT060	MAIN	SECOND SCART
0152	000100340600	WIRE TINNED COPPER NLT060	MAIN	STEREO
CS12	040752041081	CAP CER 1NF 50V 10% X7R 0805	MAIN	STEREO
CV50	040067041361	CAP CER 100NF 25V 20% 0603	MAIN	STEREO
DP61	045198000011	IC TL431CLP REGULATOR	MAIN	STEREO
IP05	045038362811	IC TCDT1101 OPTOCUPLER	MAIN	STEREO
JA05	000100340600	WIRE TINNED COPPER NLT060 - 7.5mm	MAIN	STEREO
RS09	030010610481	RESISTOR C.F 100K 1/8W 5% 0805	MAIN	STEREO
0071	000100340600	WIRE TINNED COPPER NLT060	MAIN	STEREO
0072	000100340600	WIRE TINNED COPPER NLT060	MAIN	STEREO
0073	000100340600	WIRE TINNED COPPER NLT060	MAIN	STEREO
0074	000100340600	WIRE TINNED COPPER NLT060	MAIN	STEREO
0075	000100340600	WIRE TINNED COPPER NLT060	MAIN	STEREO
0081	000100340600	WIRE TINNED COPPER NLT060	MAIN	STEREO
0111	000100340600	WIRE TINNED COPPER NLT060	MAIN	STEREO
0112	000100340600	WIRE TINNED COPPER NLT060	MAIN	STEREO
0113	000100340600	WIRE TINNED COPPER NLT060	MAIN	STEREO
0114	000100340600	WIRE TINNED COPPER NLT060	MAIN	STEREO
0115	000100340600	WIRE TINNED COPPER NLT060	MAIN	STEREO
C500	042446501061	CAP ELECT 10MF 50V 20%	MAIN	STEREO
C501	040067041081	CAP CER 100NF 50V 20% Z5U 0805	MAIN	STEREO
C502	040067041081	CAP CER 100NF 50V 20% Z5U 0805	MAIN	STEREO

	DESCRIPTION	BOARD	FUNC:
	2041081 CAP CER 1NF 50V 10% X7R 0805	MAIN	STEREO
	4081881 CAP CER 470NF 16V 10% X7R 0805	MAIN	STEREO
	044081881 CAP CER 470NF 16V 10% X7R 0805	MAIN	STEREO
	752041081 CAP CER 1NF 50V 10% X7R 0805	MAIN	STEREO
	0067041081 CAP CER 100NF 50V 20% Z5U 0805	MAIN	STEREO
	2416502261 CAP ELECT 22MF 50V 20%	MAIN	STEREO
	42416502261 CAP ELECT 22MF 50V 20%	MAIN	STEREO
	042446501061 CAP ELECT 10MF 50V 20%	MAIN	STEREO
	042446501061 CAP ELECT 10MF 50V 20%	MAIN	STEREO
	040067041081 CAP CER 100NF 50V 20% Z5U 0805	MAIN	STEREO
	040067041081 CAP CER 100NF 50V 20% Z5U 0805	MAIN	STEREO
	042033901011 CAP ELECT 3.3MF 50V 20%	MAIN	STEREO
	040052043381 CAP CER 330NF 50V20-80%Y5V0805	MAIN	STEREO
	040052043381 CAP CER 330NF 50V20-80%Y5V0805	MAIN	STEREO
	040067041081 CAP CER 100NF 50V 20% Z5U 0805	MAIN	STEREO
C526	042446501061 CAP ELECT 10MF 50V 20%	MAIN	STEREO
C527	040052043381 CAP CER 330NF 50V20-80%Y5V0805	MAIN	STEREO
C528	040067041081 CAP CER 100NF 50V 20% Z5U 0805	MAIN	STEREO
C529	040043045681 CAP CER 56PF 50V 5% COG 0805	MAIN	STEREO
C530	040043045681 CAP CER 56PF 50V 5% COG 0805	MAIN	STEREO
C531	040043045681 CAP CER 56PF 50V 5% COG 0805	MAIN	STEREO
C532	040032042281 CAP CER 2.2PF 50V 5% COG 0805	MAIN	STEREO
C533	040032042281 CAP CER 2.2PF 50V 5% COG 0805	MAIN	STEREO
C539	042446501061 CAP ELECT 10MF 50V 20%	MAIN	STEREO
C540	042446501061 CAP ELECT 10MF 50V 20%	MAIN	STEREO
CA04	040050043381 CAP CER 3.3NF 50V 10% X7R 0805	MAIN	STEREO
CA07	040044081881 CAP CER 470NF 16V 10% X7R 0805	MAIN	STEREO
CA10	042440251081 CAP ELECT 1.000MF 25V 20%	MAIN	STEREO
CV01	042416501051 CAP ELECT 1MF 50V 20%	MAIN	STEREO
CV42	040752041081 CAP CER 1NF 50V 10% X7R 0805	MAIN	STEREO
DV08	000100340600 WIRE TINNED COPPER NLT060	MAIN	STEREO
HS01	075100411009 CONN 4P IN-LINE VRT W/LOCK	MAIN	STEREO
LS08	608980000101 COIL 12UH 5% 0.15A AXIAL FIXED	MAIN	STEREO
LV07	608000000021 COIL 10UH 5% 0.16A AXIAL FIXED	MAIN	STEREO
R501	030010647381 RESISTOR C.F 47K 1/8W 5% 0805	MAIN	STEREO
R803	030010683481 RESISTOR C.F 2.2R 1/8W 5% 0805	MAIN	STEREO
R804	030010610181 RESISTOR C.F 100R 1/8W 5% 0805	MAIN	STEREO
R805	030010610181 RESISTOR C.F 100R 1/8W 5% 0805	MAIN	STEREO
R806	030020622911 RESISTOR C.F 2.2R 1/4W 5%	MAIN	STEREO
RA06	030010633281 RESISTOR C.F 3.3K 1/8W 5% 0805	MAIN	STEREO
RA07	030010633281 RESISTOR C.F 3.3K 1/8W 5% 0805	MAIN	STEREO
RA08	030010633281 RESISTOR C.F 3.3K 1/8W 5% 0805	MAIN	STEREO
RP12	030010656281 RESISTOR C.F 5.6K 1/8W 5% 0805	MAIN	STEREO
RS08	030010647181 RESISTOR C.F 470R 1/8W 5% 0805	MAIN	STEREO
RV43	030010668281 RESISTOR C.F 6.8K 1/8W 5% 0805	MAIN	STEREO
RV45	030010622281 RESISTOR C.F 2.2K 1/8W 5% 0805	MAIN	STEREO

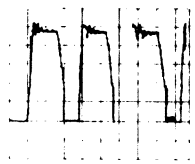
POS.	CODE	DESCRIPTION	BOARD	FUNC.	
RV55	030010600081	RESISTOR C.F OR 1/8W 5% 0805	MAIN	STEREO	
SA02	037730007771	FILTER SAW K9453M B/GD/KL/L'AU	MAIN	STEREO	
TP60	000100340600	WIRE TINNED COPPER NLT060	MAIN	STEREO	
TV02	000100340600	WIRE TINNED COPPER NLT060	MAIN	STEREO	
VAP1	000100340600	WIRE TINNED COPPER NLT060	MAIN	STEREO	
VAP2	611380011031	TRIMPOT 10K 0.1W 30% V-ADJ 5/5	MAIN	STEREO	
X800	049030000541	CRYSTAL 18.432 MHZ HC49U	MAIN	STEREO	
IC01	045000003531	IC ST92195ST01_V1	MAIN	STEREO 1P TXT NO EPG	
RA03	030010647281	RESISTOR C.F 4.7K 1/8W 5% 0805	MAIN	"STEREO 20/21""	
IA01	045000022221	IC TDA7496	MAIN	"STEREO 20/21"" "	
IA01	045000001111	IC TDA7495	MAIN	STEREO/110 DEGREE	
RA03	030010610381	RESISTOR C.F 10K 1/8W 5% 0805	MAIN	STEREO/110 DEGREE	
0148	000100340600	WIRE TINNED COPPER NLT060	MAIN	TELECRUZ WEB	
CV46	040044081861	CAP CER 470NF 16V 10% X7R 0603	MAIN	TELECRUZ WEB	
CV55	040067041361	CAP CER 100NF 25V 20% 0603	MAIN	TELECRUZ WEB	
LV05	608080001141	COIL 4.7UH 10% 0.82A AXL FIX B	MAIN	TELECRUZ WEB	
PCB	614000000630	PCB (00TA063) PHONE JACK PCB	MAIN	TELECRUZ WEB	
SS13	075030511001	CONN 5P IN-LINE VRT W/LOCK	MAIN	TELECRUZ WEB	
SS14	075030311021	CONN 3P IN-LINE VRT W/LOCK	MAIN	TELECRUZ WEB	
SS15	075030211001	CONN 2P VRT W/LOCK 5MM VERT	MAIN	TELECRUZ WEB	
SS15	002025010330	CABLE 2P*2SKT. 30cm	MAIN	TELECRUZ WEB	
SS17	075100211000	CONN 2P VRT W/LOCK NARROW	MAIN	TELECRUZ WEB	
SS18	075100411000	CONN 4P IN-LINE VRT W/LOCK	MAIN	TELECRUZ WEB	
SS32	002032000050	CABLE 5P*2SKT. 30cm.	MAIN	TELECRUZ WEB	
SS33	002042004410	CABLE 4P*2SKT.25CM	MAIN	TELECRUZ WEB	
SS34	002032000020	CABLE 3P*2SKT.25CM	MAIN	TELECRUZ WEB	
SS35	002022000021	CABLE 2P*2SKT.25CM	MAIN	TELECRUZ WEB	
PCB	614001000380	PCB(01TA038)TELECRUZ ARA PT90A	TLCRZ ARA BOARD		TELECRUZ WEB
SS30	075 110 721 051	CONN 10P BRD TO BRD 2.5MM	TLCRZ ARA BOARD		TELECRUZ WEB
SS31	075 110 721 051	CONN 10P BRD TO BRD 2.5MM	TLCRZ ARA BOARD		TELECRUZ WEB
SS32	075030511001	CONN 5P IN-LINE VRT W/LOCK	TLCRZ ARA BOARD		TELECRUZ WEB
SS33	075100411000	CONN 4P IN-LINE VRT W/LOCK	TLCRZ ARA BOARD		TELECRUZ WEB
SS34	075030311021	CONN 3P IN-LINE VRT W/LOCK	TLCRZ ARA BOARD		TELECRUZ WEB
SS35	075030211001	CONN 2P VRT W/LOCK 5MM VERT	TLCRZ ARA BOARD		TELECRUZ WEB
C957	040730014081	CAP CER 10NF 50V 10% X7R 0805	EPG	TWINTUN.	
I905	045000222221	IC HCF4052B	EPG	TWINTUN.	
R908	030010610381	RESISTOR C.F 10K 1/8W 5% 0805	EPG	TWINTUN.	
R922	030010610281	RESISTOR C.F 1K 1/8W 5% 0805	EPG	TWINTUN.	
0146	000100340600	WIRE TINNED COPPER NLT060	MAIN	TWINTUN.	
C701	042414164761	CAP ELECT 47MF 16V 20%	MAIN	TWINTUN.	
C702	040067041081	CAP CER 100NF 50V 20% Z5U 0805	MAIN	TWINTUN.	
C703	042446501061	CAP ELECT 10MF 50V 20%	MAIN	TWINTUN.	
C704	040067041081	CAP CER 100NF 50V 20% Z5U 0805	MAIN	TWINTUN.	
C705	042416501051	CAP ELECT 1MF 50V 20%	MAIN	TWINTUN.	
C706	042446501061	CAP ELECT 10MF 50V 20%	MAIN	TWINTUN.	
C707	042446502251	CAP ELECT 2.2MF 50V 20%	MAIN	TWINTUN.	

POS.	CODE	DESCRIPTION	BOARD	FUNC.
C708	040054043381	CAP CER 33PF 50V 5% COG 0805	MAIN	TWINTUN.
C709	040730014081	CAP CER 10NF 50V 10% X7R 0805	MAIN	TWINTUN.
C710	042446501061	CAP ELECT 10MF 50V 20%	MAIN	TWINTUN.
C711	040067041081	CAP CER 100NF 50V 20% Z5U 0805	MAIN	TWINTUN.
C712	040732082081	CAP CER 8.2PF 50V 10% COG 0805	MAIN	TWINTUN.
C714	042414164761	CAP ELECT 47MF 16V 20%	MAIN	TWINTUN.
C715	040067041081	CAP CER 100NF 50V 20% Z5U 0805	MAIN	TWINTUN.
C716	040044081881	CAP CER 470NF 16V 10% X7R 0805	MAIN	TWINTUN.
C717	040732082081	CAP CER 8.2PF 50V 10% COG 0805	MAIN	TWINTUN.
D701	048210411001	DIODE GP.1N4148 DO-35	MAIN	TWINTUN.
F701	037730007911	FILTER SAW K2966M	MAIN	TWINTUN.
F702	037730007061	FILTER TRAP 5.5/6.5MHZ TPWA02B	MAIN	TWINTUN.
I701	045190823541	IC TDA4472 VIF&SIF	MAIN	TWINTUN.
L702	608080000191	COIL 8.2UH 5% 0.165A AXIAL FIX	MAIN	TWINTUN.
L703	608980000111	COIL 1UH 5% 0.27A AXIAL FIXED	MAIN	TWINTUN.
L704	608280001901	COIL VARIABLE 38.9MHZ	MAIN	TWINTUN.
R701	030010610181	RESISTOR C.F 100R 1/8W 5% 0805	MAIN	TWINTUN.
R702	030010610181	RESISTOR C.F 100R 1/8W 5% 0805	MAIN	TWINTUN.
R704	030010610381	RESISTOR C.F 10K 1/8W 5% 0805	MAIN	TWINTUN.
R705	030010610381	RESISTOR C.F 10K 1/8W 5% 0805	MAIN	TWINTUN.
R706	030010610381	RESISTOR C.F 10K 1/8W 5% 0805	MAIN	TWINTUN.
R707	030010622381	RESISTOR C.F 22K 1/8W 5% 0805	MAIN	TWINTUN.
R708	030010610281	RESISTOR C.F 1K 1/8W 5% 0805	MAIN	TWINTUN.
R709	030010610281	RESISTOR C.F 1K 1/8W 5% 0805	MAIN	TWINTUN.
R710	030010610281	RESISTOR C.F 1K 1/8W 5% 0805	MAIN	TWINTUN.
R711	030010610181	RESISTOR C.F 100R 1/8W 5% 0805	MAIN	TWINTUN.
R712	030010610381	RESISTOR C.F 10K 1/8W 5% 0805	MAIN	TWINTUN.
R713	030010656381	RESISTOR C.F 56K 1/8W 5% 0805	MAIN	TWINTUN.
R714	030010656381	RESISTOR C.F 56K 1/8W 5% 0805	MAIN	TWINTUN.
R715	030010615181	RESISTOR C.F 150R 1/8W 5% 0805	MAIN	TWINTUN.
R716	030010610381	RESISTOR C.F 10K 1/8W 5% 0805	MAIN	TWINTUN.
R930	030010633281	RESISTOR C.F 3.3K 1/8W 5% 0805	MAIN	TWINTUN.
S901	002032000001	CABLE 3P*2SKT 24CM W/SHIELDING	MAIN	TWINTUN.
S901	075030311021	CONN 3P IN-LINE VRT W/LOCK	MAIN	TWINTUN.
TU01	616811120121	TUNER TECC2949PC28F SPLITTER.	MAIN	TWINTUN.
TUN2	002013202310	CABLE DBL.ISOLATE AERIAL	MAIN	TWINTUN.
TUN2	616800020001	TUNER PLL CTT5020E/CTF5510	MAIN	TWINTUN.
0141	000100340600	WIRE TINNED COPPER NLT060	MAIN	TXT
0143	000100340600	WIRE TINNED COPPER NLT060	MAIN	TXT
C031	040742022261	CAP CER 22NF 50V 5% X7R 0603	MAIN	TXT
D006	048210411001	DIODE GP.1N4148 DO-35	MAIN	TXT
R050	040044081861	CAP CER 470NF 16V 10% X7R 0603	MAIN	TXT
R053	030011647361	RESISTOR C.F 47K 1/10W 5% 0603	MAIN	TXT
T001	046246022281	TRS.BC547B TO-92	MAIN	TXT
0011	000100340600	WIRE TINNED COPPER NLT060	MAIN	TXT
0012	000100340600	WIRE TINNED COPPER NLT060	MAIN	TXT

POS.	CODE	DESCRIPTION	BOARD	FUNC.
0016	000100340600	WIRE TINNED COPPER NLT060	MAIN	TXT
0054	*000100340600*	*WIRE TINNED COPPER NLT060*	MAIN	TXT
C005	040067041081	CAP CER 100NF 50V 20% Z5U 0805	MAIN	TXT
C008	040067041081	CAP CER 100NF 50V 20% Z5U 0805	MAIN	TXT NO EPG
C009	040031042281	CAP CER 22PF 50V 5% COG 0805	MAIN	TXT NO EPG
C010	040730022281	CAP CER 2.2NF 50V 10% X7R 0805	MAIN	TXT NO EPG
C013	040730022281	CAP CER 2.2NF 50V 10% X7R 0805	MAIN	TXT NO EPG
C015	040043415181	CAP CER 150PF 50V 5% COG 0805	MAIN	TXT NO EPG
C016	040044081881	CAP CER 470NF 16V 10% X7R 0805	MAIN	TXT NO EPG
C017	030010600081	RESISTOR C.F 0R 1/8W 5% 0805	MAIN	TXT NO EPG
C019	040044081881	CAP CER 470NF 16V 10% X7R 0805	MAIN	TXT NO EPG
R022	030010656281	RESISTOR C.F 5.6K 1/8W 5% 0805	MAIN	TXT NO EPG
R023	030010656281	RESISTOR C.F 5.6K 1/8W 5% 0805	MAIN	TXT NO EPG
R025	030010656281	RESISTOR C.F 5.6K 1/8W 5% 0805	MAIN	TXT NO EPG
POW1	81000000131	SWITCH POWER ALPS	MAIN	W/O ECO SW.
C017	040031042281	CAP CER 22PF 50V 5% COG 0805	MAIN	W/O TXT NO EPG
C018	040043447281	CAP CER 4.7NF 50V 10% X7R 0805	MAIN	W/O TXT NO EPG
C019	040043447281	CAP CER 4.7NF 50V 10% X7R 0805	MAIN	W/O TXT NO EPG
C030	040031042281	CAP CER 22PF 50V 5% COG 0805	MAIN	W/O TXT NO EPG
IC01	045000011531	IC ST92185	MAIN	W/O TXT NO EPG
R024	030010656281	RESISTOR C.F 5.6K 1/8W 5% 0805	MAIN	W/O TXT NO EPG
R025	030010656281	RESISTOR C.F 5.6K 1/8W 5% 0805	MAIN	W/O TXT NO EPG
JV05	000100340600	WIRE TINNED COPPER NLT060 - 5mm	MAIN	W/O WEB
JV06	000100340600	WIRE TINNED COPPER NLT060 - 5mm	MAIN	W/O WEB
JV07	000100340600	WIRE TINNED COPPER NLT060 - 5mm	MAIN	W/O WEB
JV08	000100340600	WIRE TINNED COPPER NLT060 - 5mm	MAIN	W/O WEB
JV09	000100340600	WIRE TINNED COPPER NLT060 - 5mm	MAIN	W/O WEB
RV62	030010610181	RESISTOR C.F 100R 1/8W 5% 0805	MAIN	WITH WEB
RV63	030010610281	RESISTOR C.F 1K 1/8W 5% 0805	MAIN	WITH WEB
RV64	030010675081	RESISTOR C.F 75R 1/8W 5% 0805	MAIN	WITH WEB
RV65	030020675011	RESISTOR C.F 75R 1/4W 5%	MAIN	WITH WEB
RV66	030020675011	RESISTOR C.F 75R 1/4W 5%	MAIN	WITH WEB
RV67	030020675011	RESISTOR C.F 75R 1/4W 5%	MAIN	WITH WEB
RV68	030010675081	RESISTOR C.F 75R 1/8W 5% 0805	MAIN	WITH WEB
SS08	075100211130	CONN 2P IN-LINE VRT W/LOCK WIDE	MAIN	WITH WEB
SS10	075100221111	CONN 10P IDT PF50 90325-0010	MAIN	WITH WEB
SS12	075100221101	CONN 18P IDT PF50 90325-0018	MAIN	WITH WEB
TV05	046246022281	TRS.BC547B TO-92	MAIN	WITH WEB
	002032000040	CABLE 4P*2SKT. 30cm	MAIN	WITH WEB
	002025010341	CABLE 4P 2*SKT 55cm W/AMP	PHONE JACK	WITH WEB
	002025010311	CABLE 18P 2*SKT 30cm W/AMP	MAIN	WITH WEB
	002025010330	CABLE 2P*2SKT. 30cm	MAIN	WITH WEB
	002032000050	CABLE 5P*2SKT. 30cm.	MAIN	WITH WEB
	002025010361	CABLE PRINTER 26P 55cm W/AMP	MAIN	WITH WEB
SC02	075030511100	CONN 5P VRT W/LOCK	MAIN	PT

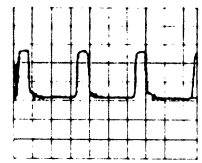
Oscilloscope Shapes

1) 5usn/div 100 volt/div



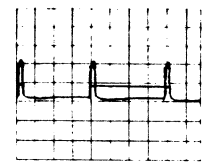
Drain of TP01

2) 20 usn/div 2 V/div



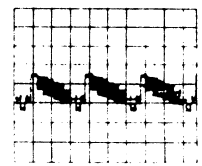
IC01, pin41

3) 5 msn/div 2 V/div



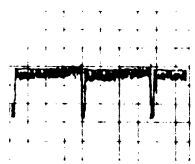
IC01, pin 40

4) 20usn/div 1 V/div



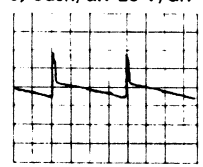
ICV1, pin13

5) 5msn/div 1 V/div



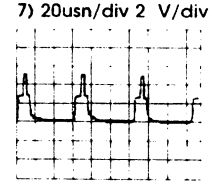
ID21, pin3

6) 5usn/div 20 V/div



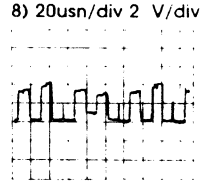
ID21, pin1

7) 20usn/div 2 V/div



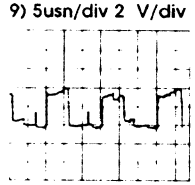
ICV1, pin49

8) 20usn/div 2 V/div



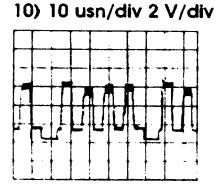
ICV1, pin34

9) 5usn/div 2 V/div



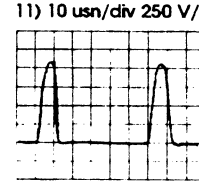
ICV1, pin35

10) 10 usn/div 2 V/div



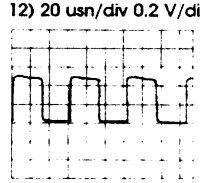
ICV1, pin36

11) 10 usn/div 250 V/div

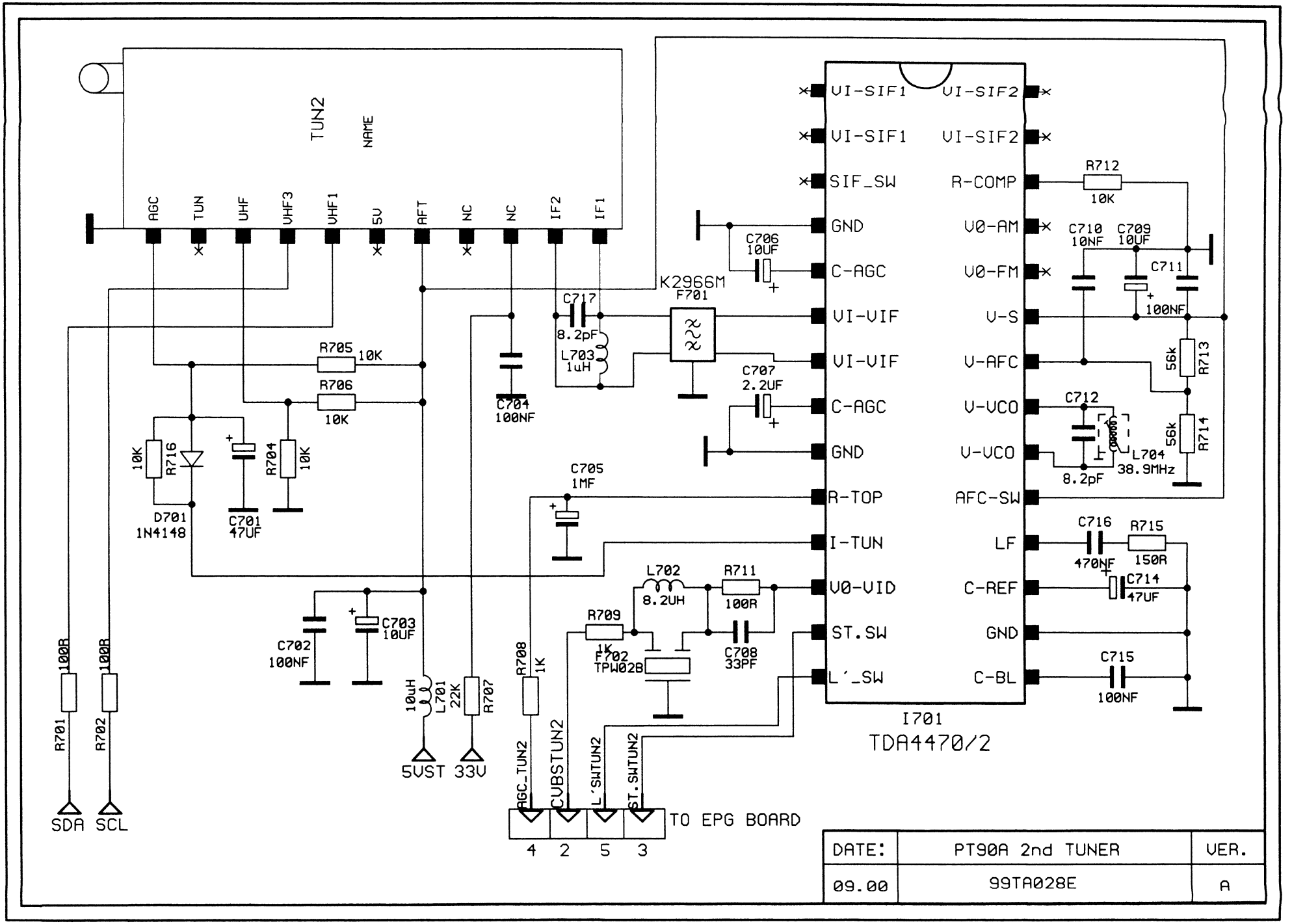


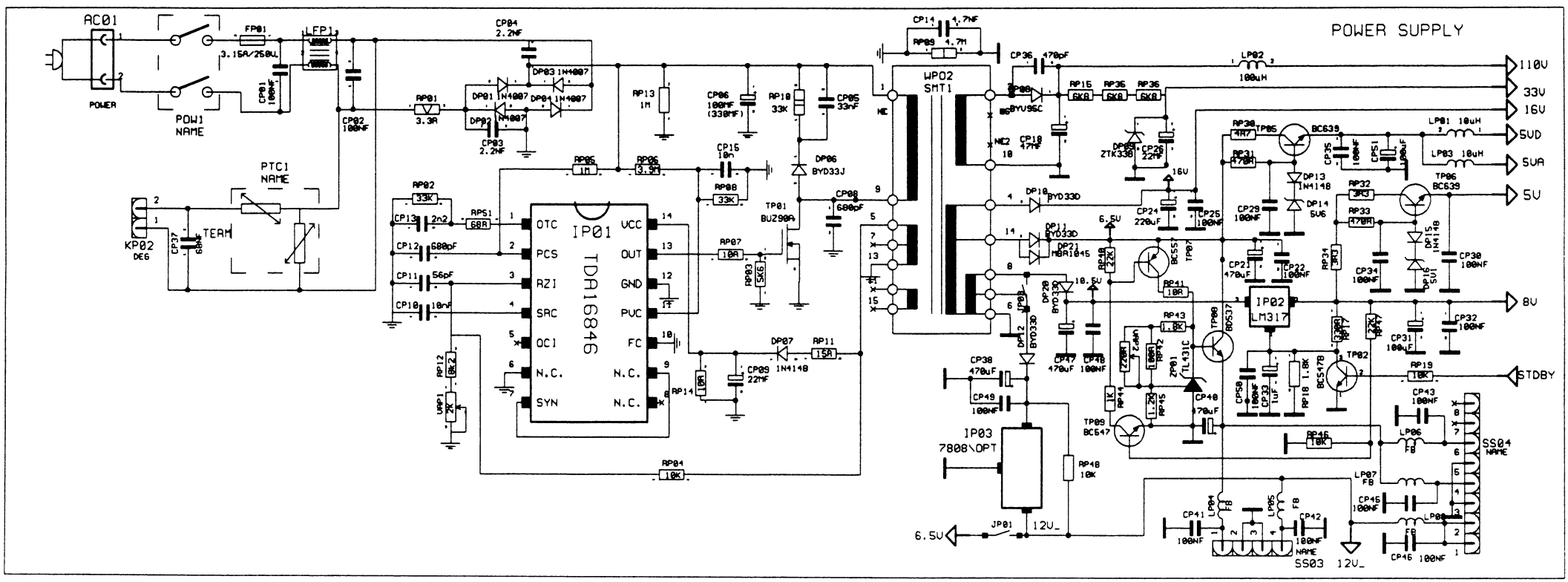
Collector of TD02

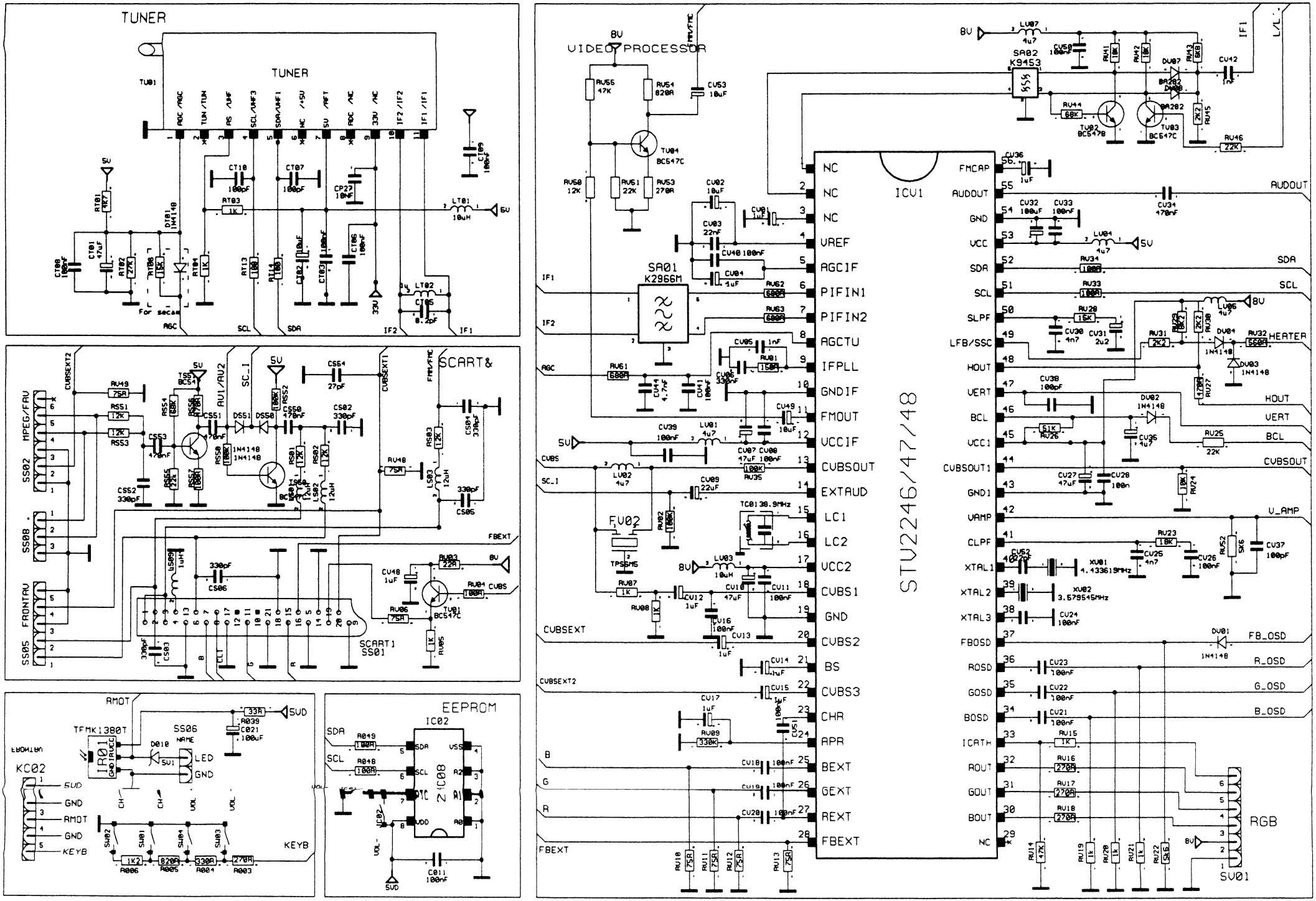
12) 20 usn/div 0.2 V/div

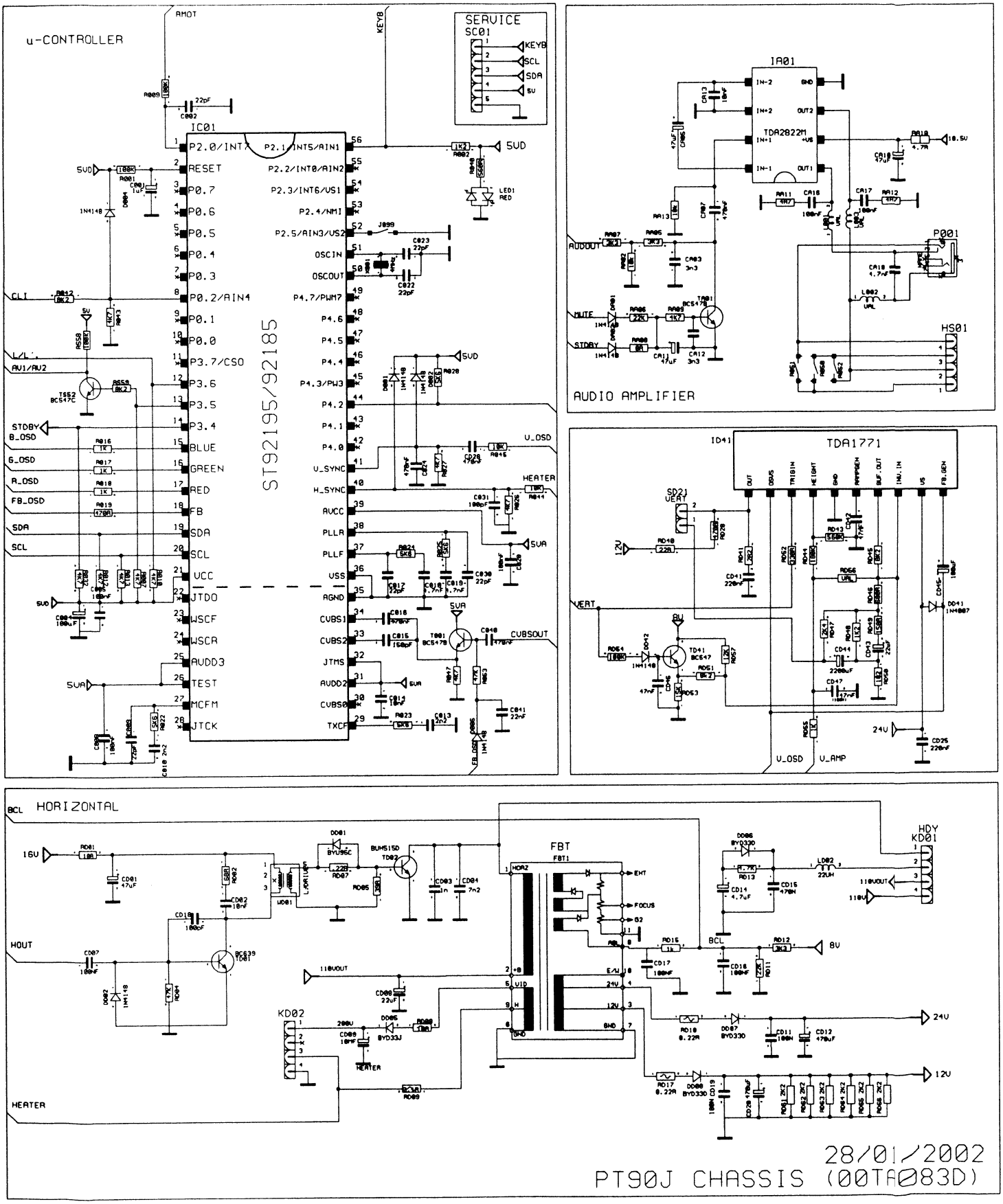


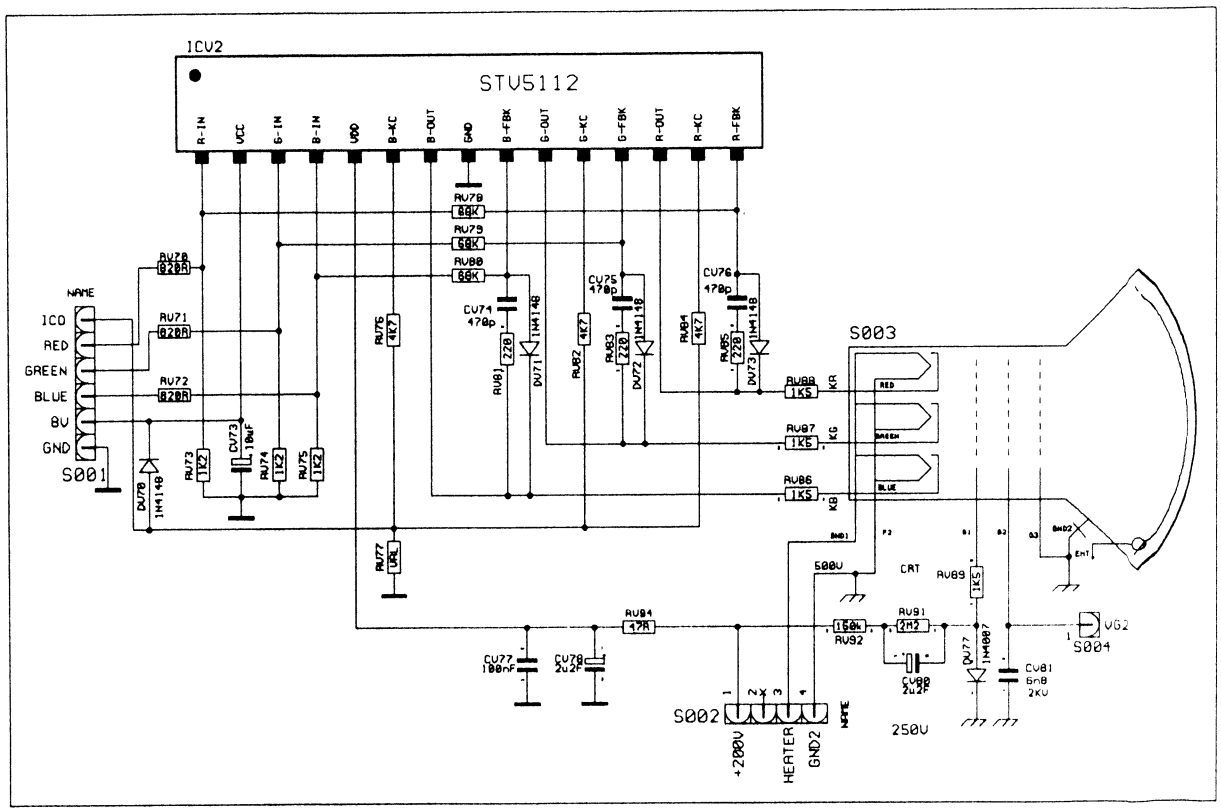
Base of TD01

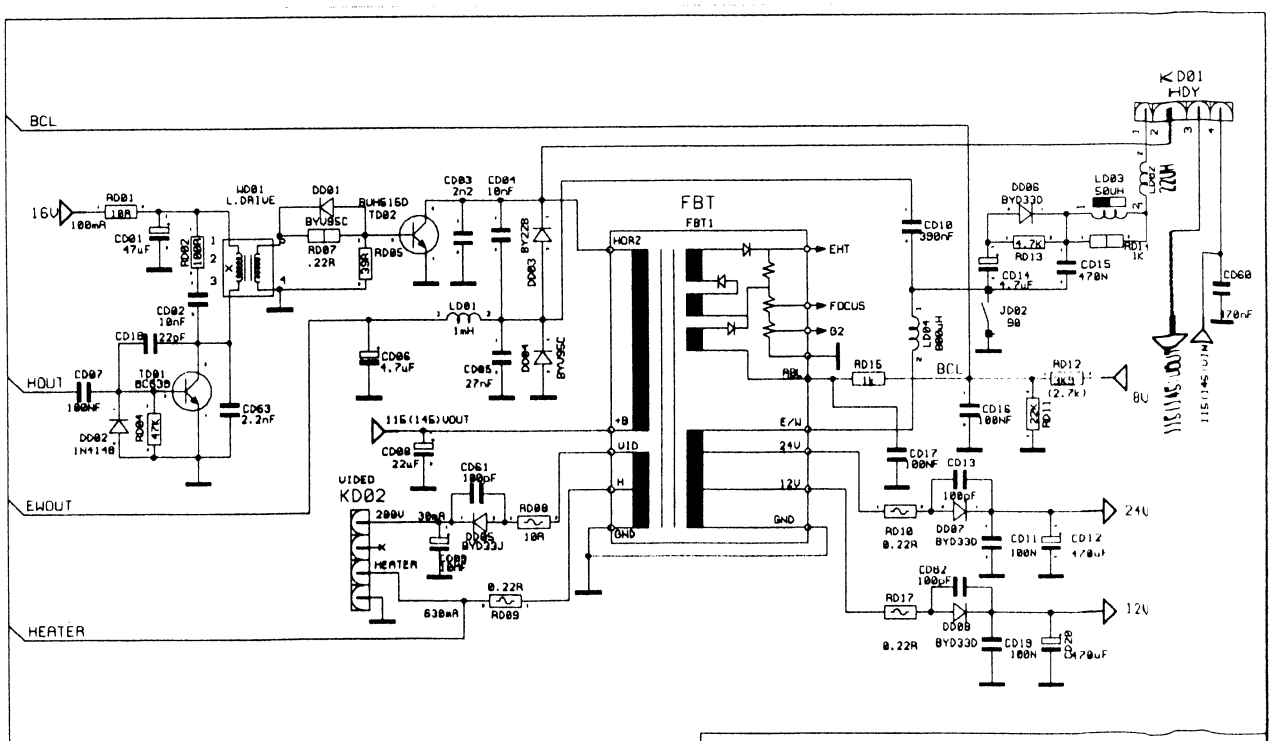

TUN2
NAME
AGC
TUN
UHF
VHF3
VHF1
5V
AFT
NC
NC
IF2
IF1
K2966M
F701
I701
TDA4470/2
VI-SIF1
VI-SIF2
SIF_SW
R-COMP
GND
V0-AM
C-AGC
V0-FM
VI-VIF
V-S
VI-VIF
V-AFC
C-AGC
V-VCO
GND
V-VCO
R-TOP
AFC-SW
I-TUN
LF
V0-VID
C-REF
ST.SW
GND
L'_SW
C-BL
R712 10K
C710 10NF
C709 10UF
C711 100NF
R713 56k
R714 56k
C712
L704 38.9MHz
8.2pF
C716 470NF
R715 150R
C714 47UF
C715 100NF
C706 10UF
C707 2.2UF
C717 8.2pF
L703 1uH
C704 100NF
C705 1MF
R705 10K
R706 10K
R716 10K
D701 1N4148
C701 47UF
R704 10K
C702 100NF
C703 10UF
L702 8.2UH
R711 100R
R709 1K
F702 TPW02B
C708 33PF
R708 1K
L701 10uH
R707 22K
R701 100R
R702 100R
SDA
SCL
5VST
33V
AGC_TUN2
CUBSTUN2
L'SWTUN2
ST.SWTUN2
TO EPG BOARD
4 2 5 3
DATE:
09.00
PT90A 2nd TUNER
99TA028E
VER.
A


POWER SUPPLY
AC01
POWER
POW1
NAME
FP01
3.15A/250V
LEP1
CP01 100NF
CP02 100NF
CP04 2.2NF
RP01 3.3R
DP01 1N4007
DP02 1N4007
DP03 1N4007
DP04 1N4007
CP03 2.2NF
PTC1
NAME
KP02
DEG
CP37 68NF
TERM
RP02 33K
CP13 2n2
CP12 680pF
CP11 56pF
CP10 10nF
RP12 8K2
VAR1 2K
RP51 68R
IP01
TDA16846
OTC
PCS
RZI
SAC
OCI
N.C.
SYN
VCC
OUT
GND
PUC
FC
N.C.
N.C.
RP13 1M
RP05 1M
RP06 3.9M
CP06 100NF (330NF)
CP15 10n
RP08 33K
RP07 10R
RP03 5K6
TP01 BUZ90A
RP18 33K
CP05 33nF
DP06 BYD33J
CP08 680pF
DP07 1N4148
RP11 15R
RP14 10R
CP09 22nF
RP04 10K
WP02
SMT1
NC1
NC2
CP14 1.7NF
RP09 1.7M
CP36 470pF
DP09 BYV95C
RP15 6K8
RP35 6K8
RP36 6K8
DP08 ZTK33B
CP26 22nF
CP18 47nF
10
DP10 BYD33D
DP11 BYD33D
DP21 MBR1045
6.5V
CP24 220uF
16V
CP25 100NF
RP40 22K
TP07 BC557
RP41 10R
DP12 BYD33D
DP20 BYD33D
10.5V
JP01
CP47 470uF
CP48 100NF
RP43 1.8K
TP08 BC547
ZP01 TL431C
WP2.4
Z20R
RP42 680R
RP44 1K
RP45 11.2K
CP40 470uF
TP09 BC547
CP38 470uF
CP49 100NF
IP03
7808\DPT
RP48 10K
JP01
12V_
6.5V
RP04 10K
IP02
LM317
RP46 10K
RP19 10K
STDBY
CP43 100NF
LP06 FB
SS04
NAME
LP07 FB
CP45 100NF
LP08 FB
CP46 100NF
SS03
12V_
CP41 100NF
LP04 FB
LP05 FB
CP42 100NF
LP02 100uH
110V
33V
16V
LP01 10uH
5VD
LP03 10uH
5VA
5V
8V
RP30 4R7
TP05 BC639
RP31 470R
DP13 1N4148
DP14 5V6
CP35 100NF
CP51 100uF
RP32 3K3
TP06 BC639
RP33 470R
DP15 1N4148
DP16 5V1
CP29 100NF
CP30 100NF
RP24 3K3
CP34 100NF
CP21 470uF
CP22 100NF
CP31 100uF
CP32 100NF
RP17 22K
RP47 22K
TP02 BC547B
RP18 1.8K
CP50 100NF
CP33 1uF

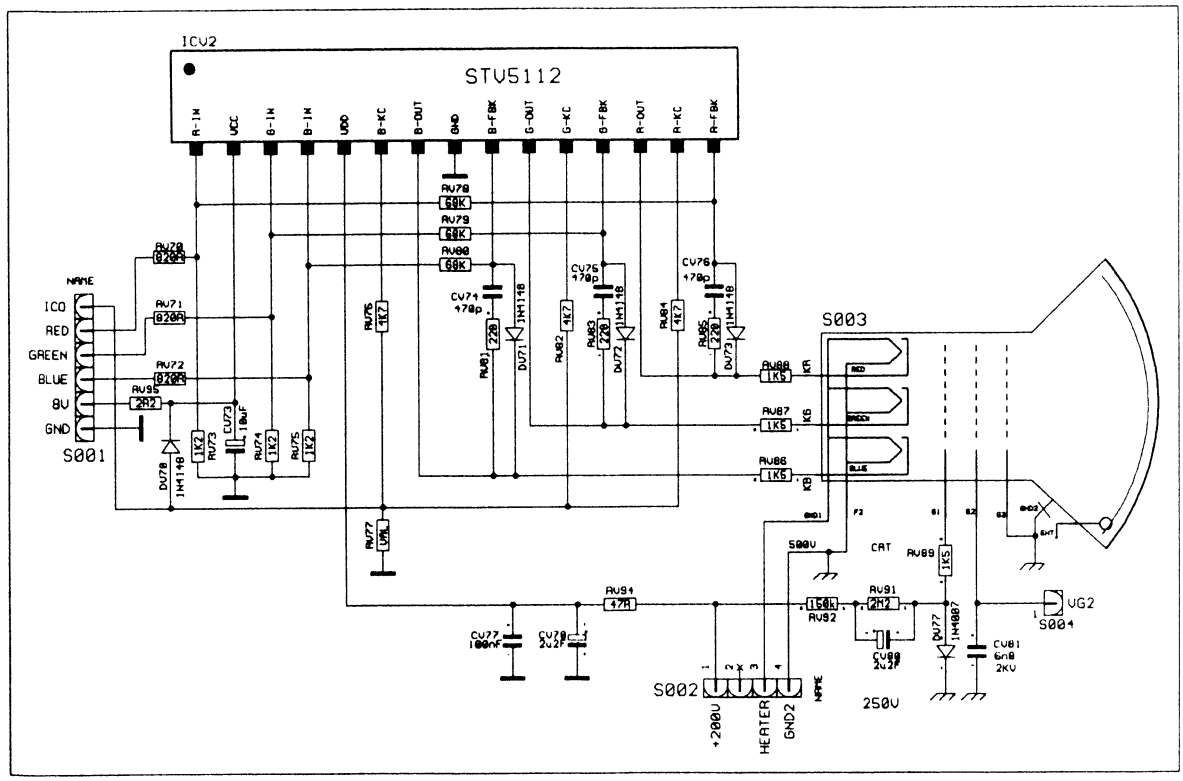

TUNER
TUNER
TU01
AGC
SCL
SDA
IF2
IF1
SCART&
SCART1
SS01
SS02 MPEG/FRV
SS08
SS05 FRONTRV
IR01
TFMK1380T
SS06
KEYB
KC02
RMOT
EEPROM
IC02
24C08
VIDEO PROCESSOR
SA01
K2966M
ICV1
STV2246/47/48
SA02
K9453
SV01
RGB
AUDOUT
SDA
SCL
HEATER
HOUT
VERT
BCL
CVBSOUT
V_AMP
FB_OSD
R_OSD
G_OSD
B_OSD
XU01
4.433619MHz
XU02
3.579545MHz
TC0138.9MHz
FV02
TPS5M5

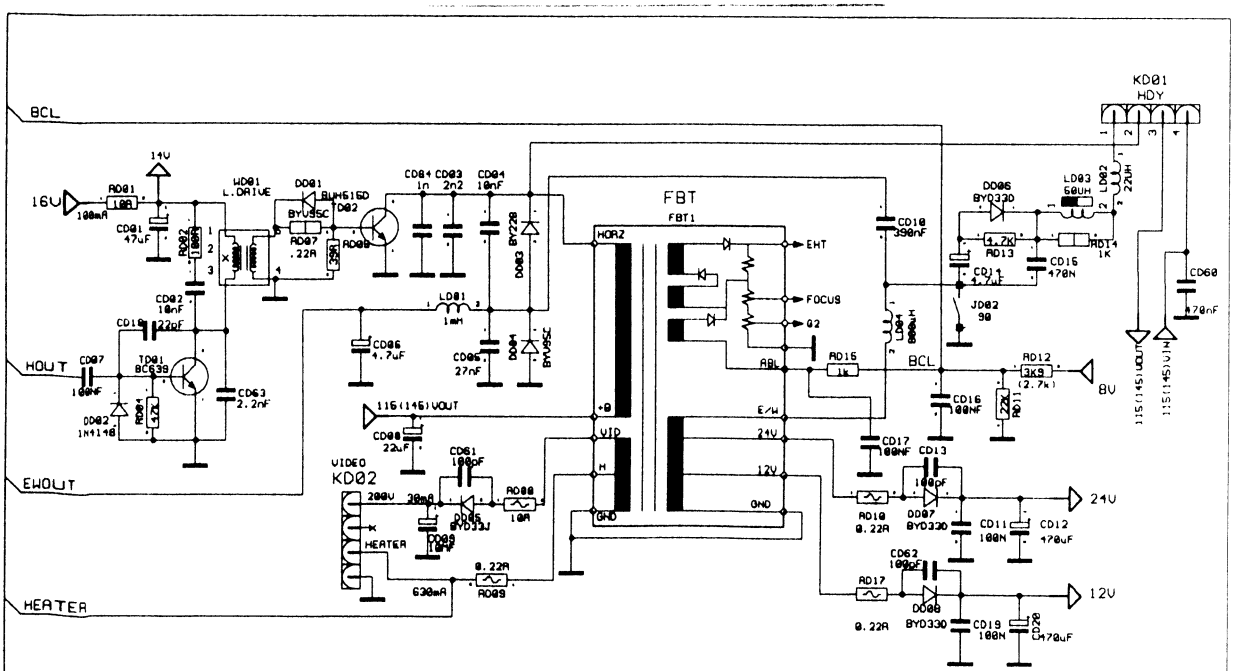

u-CONTROLLER
SERVICE
SC01
KEYB
SCL
SDA
5V
IC01
ST92195/92185
P2.0/INT7
P2.1/INT5/AIN1
P2.2/INT0/AIN2
P2.3/INT6/VS1
P2.4/NMI
P2.5/AIN3/VS2
OSCIN
OSCOUT
P4.7/PWM7
P4.6
P4.5
P4.4
P4.3/PWM3
P4.2
P4.1
P4.0
V_SYNC
H_SYNC
AVCC
PLLR
PLLF
VSS
AGND
CVBS1
CVBS2
JTMS
AUDD2
CVBS0
TXCF
RESET
P0.7
P0.6
P0.5
P0.4
P0.3
P0.2/AIN4
P0.1
P0.0
P3.7/CSO
P3.6
P3.5
P3.4
BLUE
GREEN
RED
FB
SDA
SCL
VCC
JTDO
WSCF
WSCR
AUDD3
TEST
MCFM
JTCK
CLI
AV1/AV2
STDBY
B_OSD
G_OSD
R_OSD
FB_OSD
SDA
SCL
V_OSD
HEATER
CVBSOUT
AUDIO AMPLIFIER
IA01
TDA2822M
P001
HS01
MUTE
STDBY
AUDOUT
TDA1771
ID41
SD21
VERT
V_OSD
V_AMP
HORIZONTAL
FBT
HOUT
HEATER
KD01
KD02
28/01/2002
PT90J CHASSIS (00TA083D)





PT90A MAIN F.VER





PT90A MAIN LAYER

	ST92195 TXT	ST92185 NO TXT	ST9294 CC
R24	-	5K6	27K
R25	5K6	5K6	6K8
C17	JUMPER	22pF	220pF
C18	-	4n7	2n2
C19	470nF	4n7	JUMPER
C30	-	22p	-

ST92195/92185/9294

STV2246/47/48

From 2Nd tuner

EPG OR WEB CONNECTOR

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28

SS07 IR_LED

SS06 FROM EPG BOARD

SS16

TELECAN2

CV45 470nF

SC1_IN_L

FMM/FMC

SC1_OUT_L

4052

IS01

8V

5V

MONO

EXTAUD

TUNER

TU01

ADC /ADC

TUN /TUN

AB /AB

SCL/VIF3

SDA/VIF1

NC /SU

SU /NFT

ADC /AC

3DU /AC

IF2 /IF2

IF1 /IF1

LT01 10uH

DT01 1N4148

CT01 47nF

CT02 10uF

CT03 100nF

CT04 100nF

CT05 0.2pF

CT06 1nF

AGC

SCL

SDA

IF2

IF1

SCART1 SS01

SCART2 SS02

M.SCART

JS01

JS02

JS03

JS04

ICM1

MSP34xx

x800_C533 18.432MHz 2.2pF

C528 100nF

C532 2.2pF

NC		XTAL-OUT	
AUD-OL-OUT		XTAL-IN	
D-CTH-OUT1		TESTEN	
D-CTR-OUT0		ANA-IN2+	C531 56pF
ADR-SEL		ANA-IN-	C530 56pF
STANDBYQ		ANA-IN1+	C529 56pF
I2C-CL		AVSUP	C512 C539
I2C-DA		AVSS	100nF 10uF
I2S-CL		MONO-IN	C527 330nF
I2S-WS		VREFTOP	C526 100uF
I2S-DA-OUT		SC1-IN-R	C524 330nF
I2S-DA-IN1		SC1-IN-L	C523 330nF
ADR-DA		SC2-IN-R	C535 330nF
ADR-WS		SC2-IN-L	C536 330nF
ADR-CL		SC3-IN-R	C550 330nF
I2S-DA-IN2		SC3-IN-L	C551 330nF
DVSUP		AGNDC	C520 3.3uF
DVSS		AHVSS	C518 100nF
NC		CAPL-M	C517 10uF
RESETQ		AHVSUP	C516 10uF
DACA-R		CAPL-A	C519 10uF
DACA-L		SC1-OUT-L	C515 22uF
VREF2		SC1-OUT-R	C514 22uF
DACM-R		VREF1	
DACM-L		SC2-OUT-L	C532 22uF
DACM-SUB		SC2-OUT-R	C530 22uF

GND C528 100nF

SU

SCL R884 100R

SDA R885 100R

SC1_IN_R

SC1_IN_L

SC2_IN_R

SC2_IN_L

AV1R

AV1L

SC1_OUT_R

SC1_OUT_L

SC2_OUT_R

SC2_OUT_L

HEAD_R

HEAD_L

TV_S/R

TV_S/L

SUB

C500 16uF C501 100nF

R501 47k

C502 100nF

C505 470nF

C506 470nF

C508 1nF

C509 470nF

C510 470nF

C521 470nF

C507 1nF C511 1nF C522 1nF

L801 22uH

R887 1K

R888 33K

R889 33K

T801 BC547B

FMM/FMC

R886 2K2

C518 100nF

C519 3.3uF

C520 10uF

C516 10uF

C517 10uF

C518 100nF

C519 10uF

C520 3.3uF

C521 22uF

C522 22uF

C523 22uF

C524 22uF

C525 100nF

C526 100uF

C527 330nF

C528 100nF

C529 56pF

C530 56pF

C531 56pF

C532 2.2pF

C533 18.432MHz 2.2pF

C534 330nF

C535 330nF

C536 330nF

C538 330nF

C539 10uF

C550 330nF

C551 330nF

R887 1K

R888 33K

R889 33K

T801 BC547B

FMM/FMC

ICM1 MSP34xx

SUB C521 470nF

TU_S/L C510 470nF

TU_S/R C509 470nF

HEAD_L C506 470nF

HEAD_R C505 470nF

C528 100nF

C532 2.2pF

C533 18.432MHz 2.2pF

DACM-SUB

DACM-L

DACM-R

DACA-L

DACA-R

RESETQ

NC

I2S-DA-IN2

DVSS

DVSUP

I2S-DA-IN1

I2S-DA-OUT

I2S-CL

I2S-WS

I2C-CL

I2C-DA

ADR-SEL

D-CTR-OUT0

D-CTH-OUT1

AUD-OL-OUT

XTAL-IN

XTAL-OUT

TESTEN

AVSUP

AVSS

MONO-IN

VREFTOP

SC1-IN-R

SC1-IN-L

SC2-IN-R

SC2-IN-L

SC3-IN-R

SC3-IN-L

AGNDC

AHVSS

CAPL-M

AHVSUP

CAPL-A

SC1-OUT-L

SC1-OUT-R

VREF1

SC2-OUT-L

SC2-OUT-R

VREF2

SC2-OUT-R

SC2-OUT-L

SC1-OUT-R

SC1-OUT-L

SC2-IN-R

SC2-IN-L

SC1-IN-R

SC1-IN-L

AV1R

AV1L

SC2-IN-R

SC2-IN-L

SC1-IN-R

SC1-IN-L

FMM/FMC

R886 2K2

C518 100nF

C519 3.3uF

C520 10uF

C516 10uF

C517 10uF

C518 100nF

C519 10uF

C520 3.3uF

C521 22uF

C522 22uF

C523 22uF

C524 22uF

C525 100nF

C526 100uF

C527 330nF

C528 100nF

C529 56pF

C530 56pF

C531 56pF

C532 2.2pF

C533 18.432MHz 2.2pF

C534 330nF

C535 330nF

C536 330nF

C538 330nF

C539 10uF

C550 330nF

C551 330nF

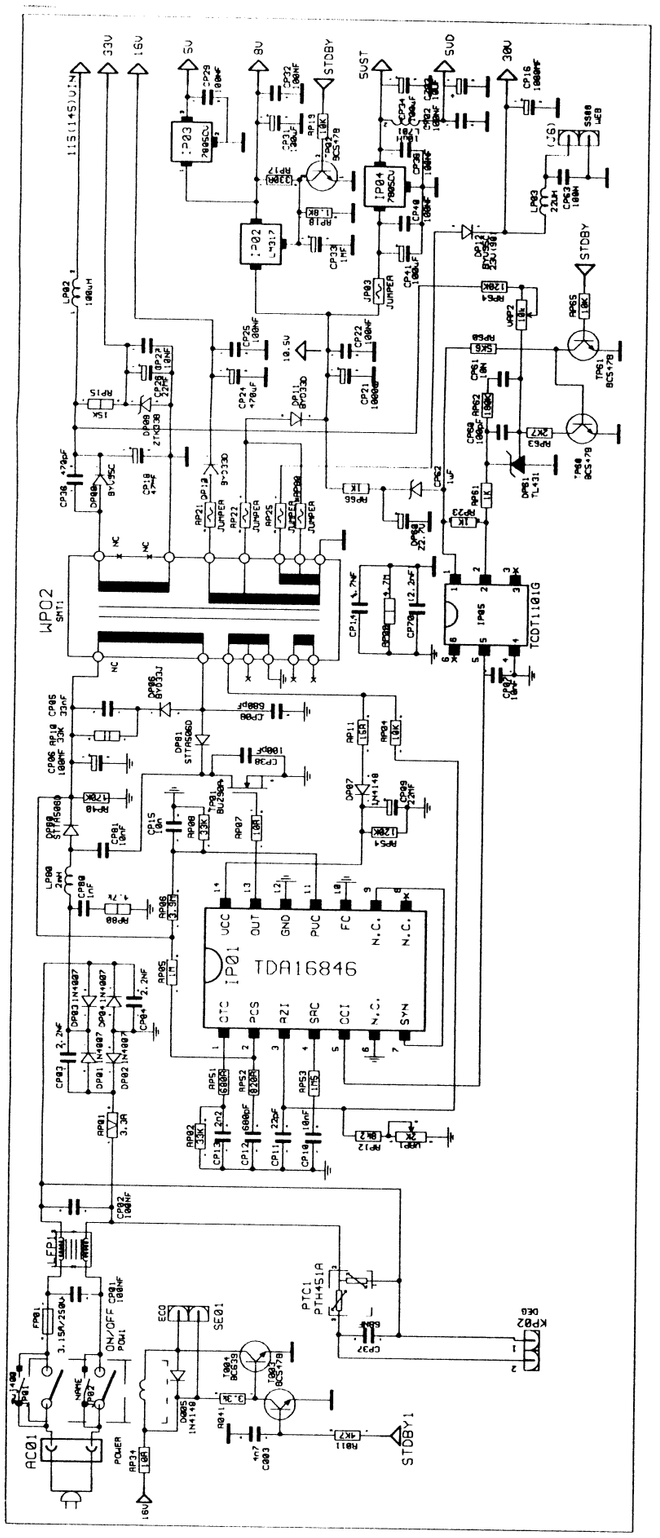
R887 1K

R888 33K

R889 33K

T801 BC547B

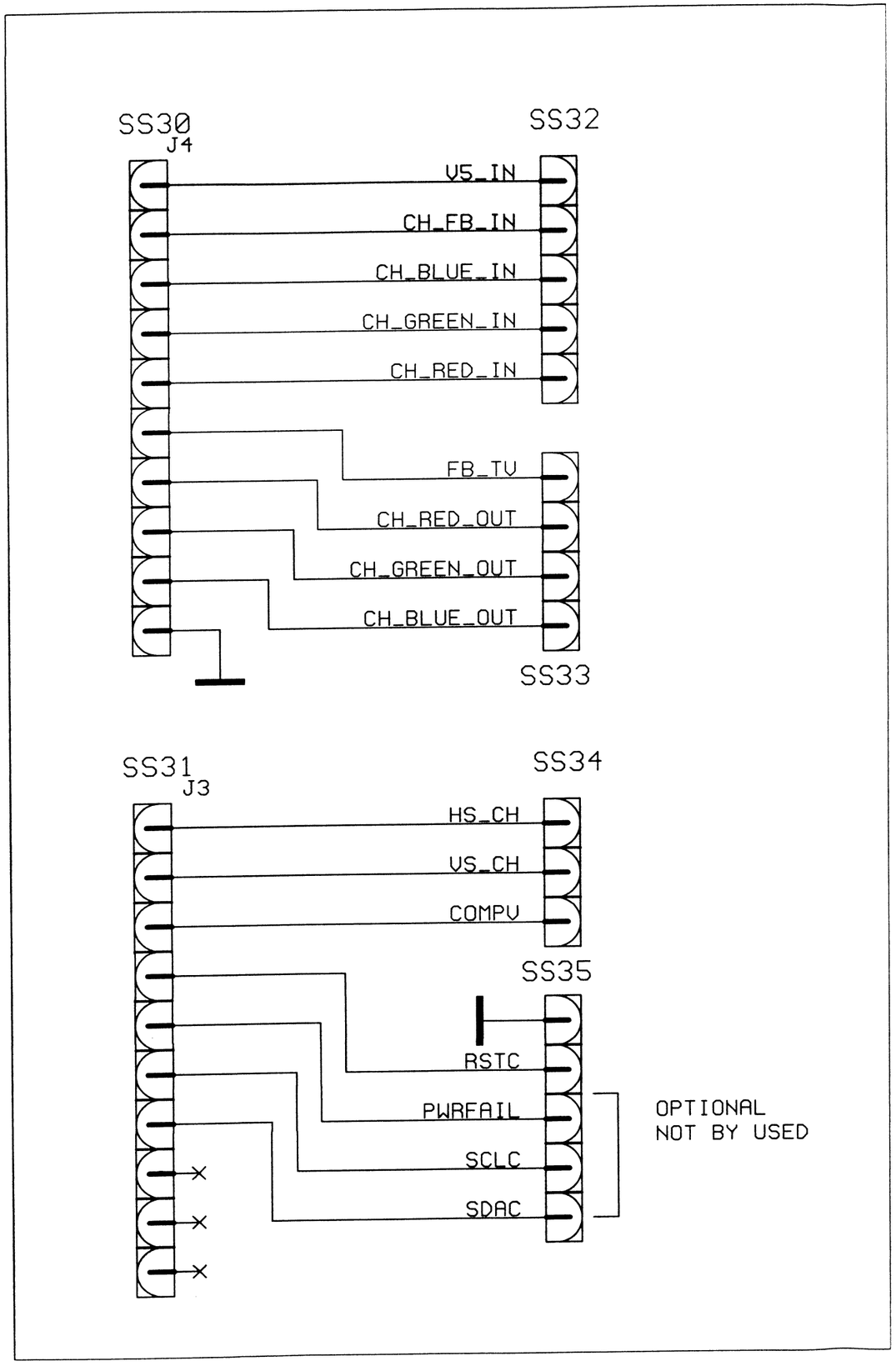
FMM/FMC

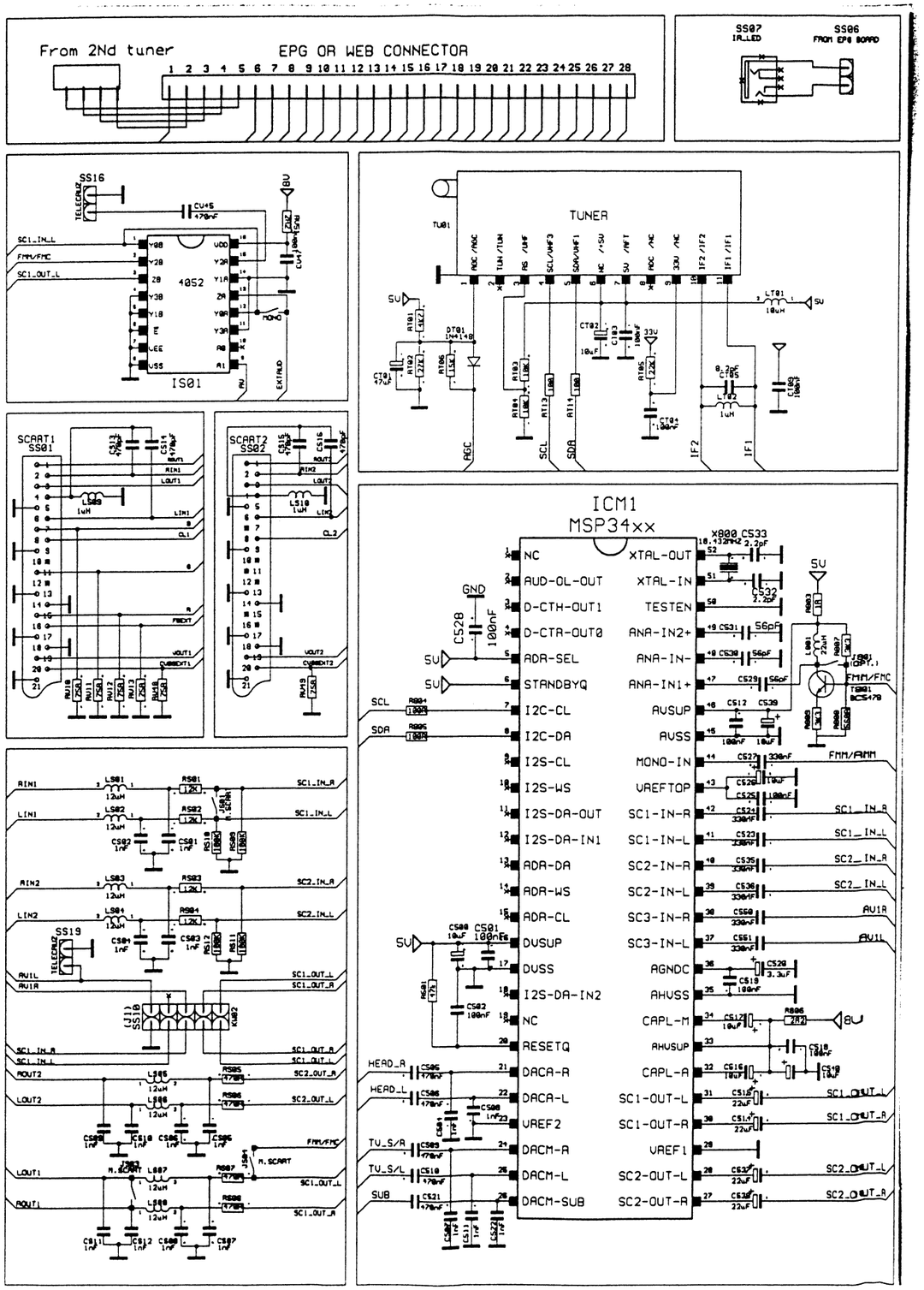

115/145/UIN
33V
16V
8V
5V
STDBY
SUST
30V
WP02
IP01
TDA16846
IP02
LM317
IP03
LM7805CU
TCDT1101G
AC01
SE01
PTC1
PTH451A
KP02
STDBY1

	ST92195 TXT	ST92185 NO TXT	ST9294 CC
R24	-	5K6	27K
R25	5K6	5K6	6K8
C17	JUMPER	22pF	220pF
C18	-	4n7	2n2
C19	470nF	4n7	JUMPER
C30	-	22p	-

STV2246/47/48

ST92195/92185/9294

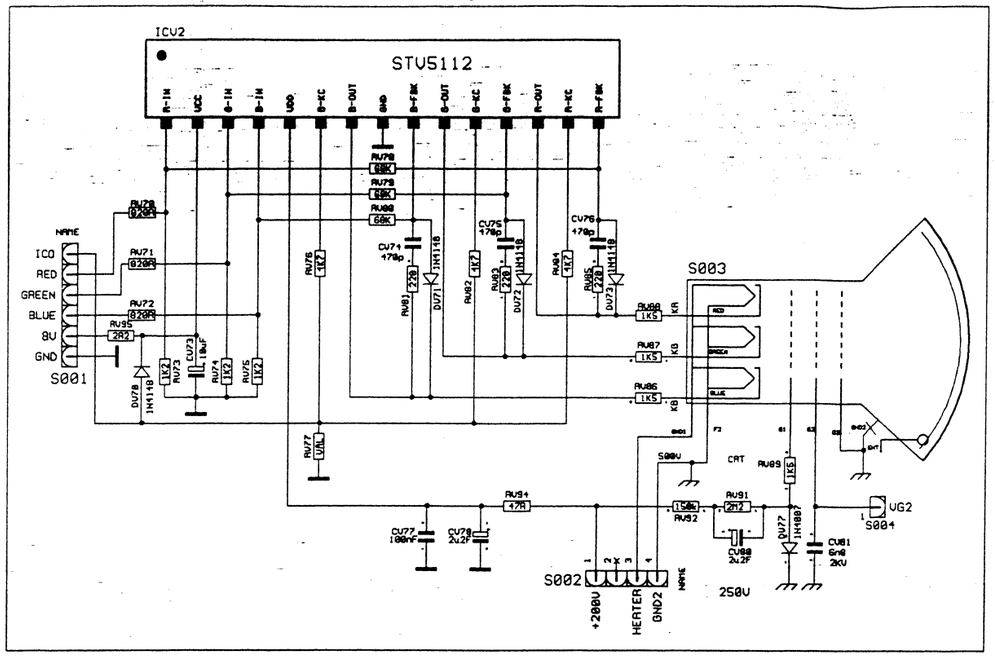

SS30
J4
SS32
V5_IN
CH_FB_IN
CH_BLUE_IN
CH_GREEN_IN
CH_RED_IN
FB_TV
CH_RED_OUT
CH_GREEN_OUT
CH_BLUE_OUT
SS33
SS31
J3
SS34
HS_CH
VS_CH
COMPV
SS35
RSTC
PWRFAIL
SCLC
SDAC
OPTIONAL
NOT BY USED

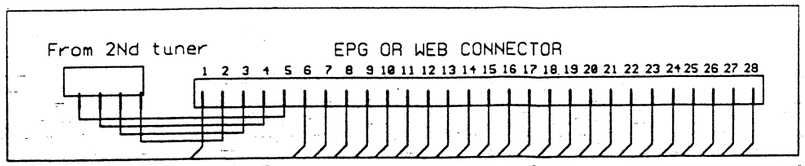

From 2Nd tuner
EPG OR WEB CONNECTOR
SS07
IR_LED
SS06
FROM EPG BOARD
SS16
IS01
4052
TUNER
TU01
SCART1
SS01
SCART2
SS02
ICM1
MSP34xx
XTAL-OUT
XTAL-IN
TESTEN
AUD-OL-OUT
D-CTH-OUT1
D-CTR-OUT0
ADR-SEL
STANDBYQ
I2C-CL
I2C-DA
I2S-CL
I2S-WS
I2S-DA-OUT
I2S-DA-IN1
ADR-DA
ADR-WS
ADR-CL
DVSUP
DVSS
I2S-DA-IN2
NC
RESETQ
DACA-R
DACA-L
VREF2
DACM-R
DACM-L
DACM-SUB
ANA-IN2+
ANA-IN-
ANA-IN1+
AVSUP
AVSS
MONO-IN
VREFTOP
SC1-IN-R
SC1-IN-L
SC2-IN-R
SC2-IN-L
SC3-IN-R
SC3-IN-L
AGNDC
AHVSS
CAPL-M
AHVSUP
CAPL-A
SC1-OUT-L
SC1-OUT-R
VREF1
SC2-OUT-L
SC2-OUT-R

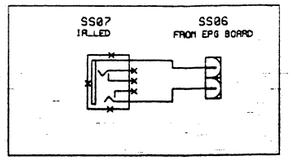
	ST92195 TXT	ST92185 NO TXT	ST9294 CC
R24	-	5K6	27K
R25	5K6	5K6	6K8
C17	JUMPER	22pF	220pF
C18	-	4n7	2n2
C19	470nF	4n7	JUMPER
C30	-	22p	-

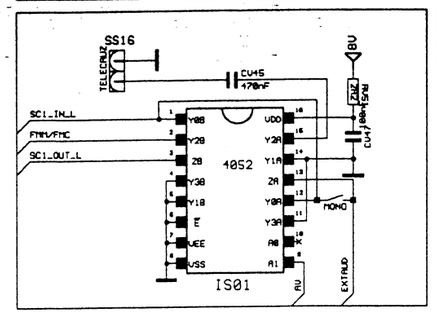
STV2246/47/48

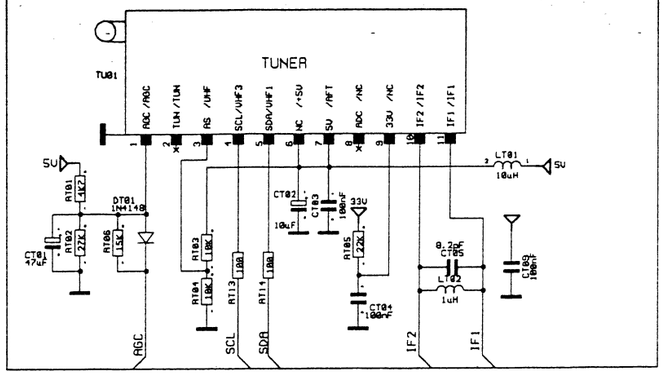
ST92195/92185/9294

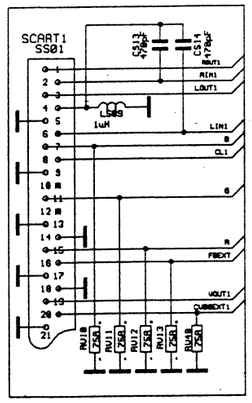

ICV2
STV5112
S003
S001
S002
S004
CRT
VG2
+200V
HEATER
GND2
250V

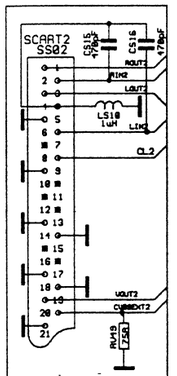

From 2Nd tuner
EPG OR WEB CONNECTOR
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28

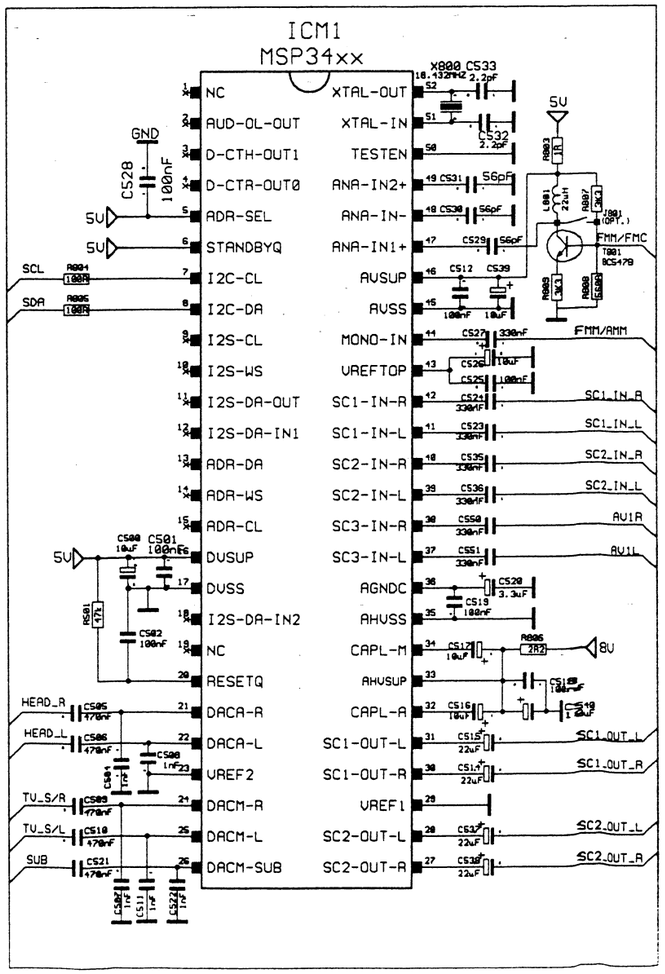

SS07
IR_LED
SS06
FROM EPG BOARD

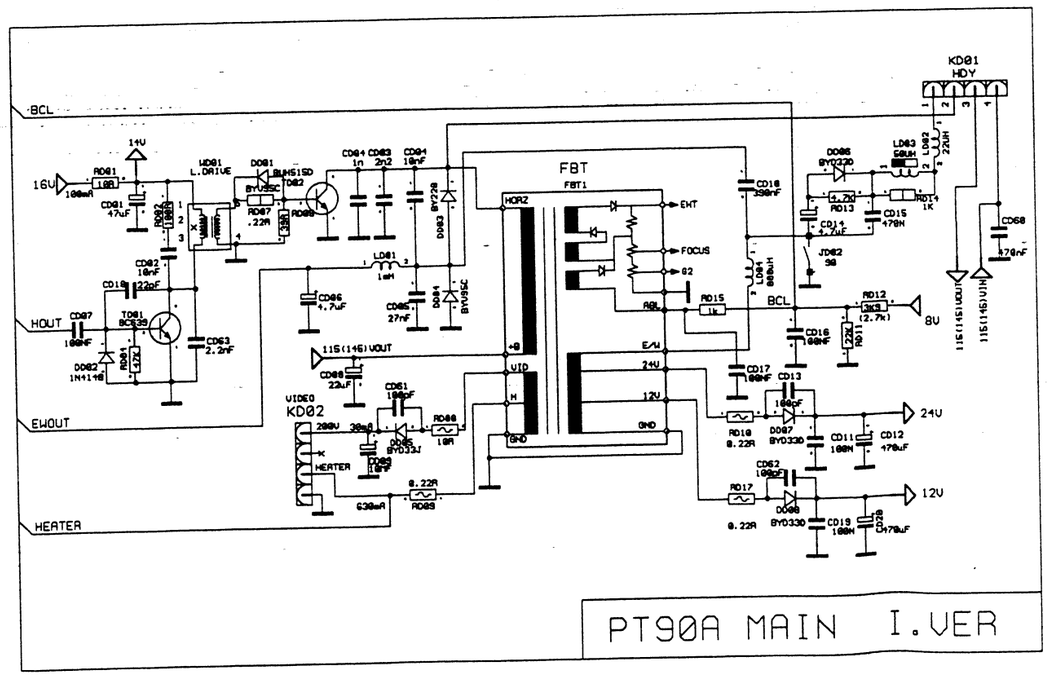

SS16
TELEGRAM
8U
SCL_IN_L
FMM/FMC
SCL_OUT_L
4052
IS01
MONO
EXTRAU

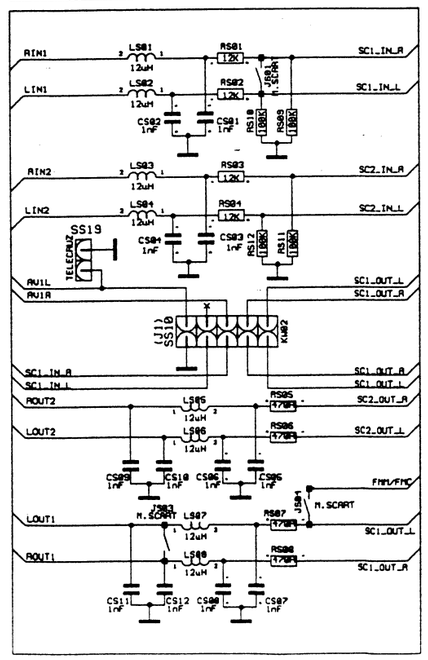

TUNER
TU01
5U
8U
AGC
SCL
SDA
IF2
IF1

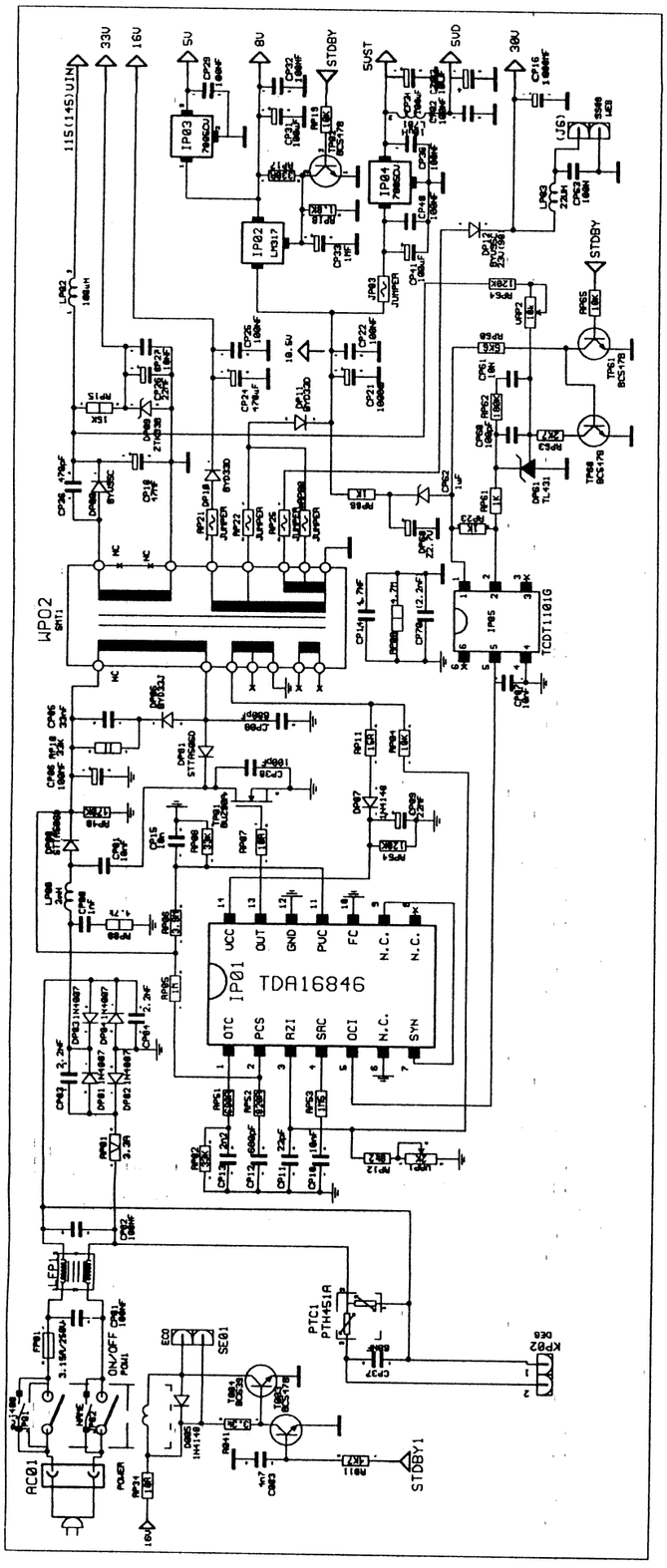

SCART1
SS01
LS89
LOUT1
LIN1
FBEXT
VOUT1
CURRENT1


SCART2
SS02
LS18
LOUT2
LIN2
VOUT2
CURRENT2

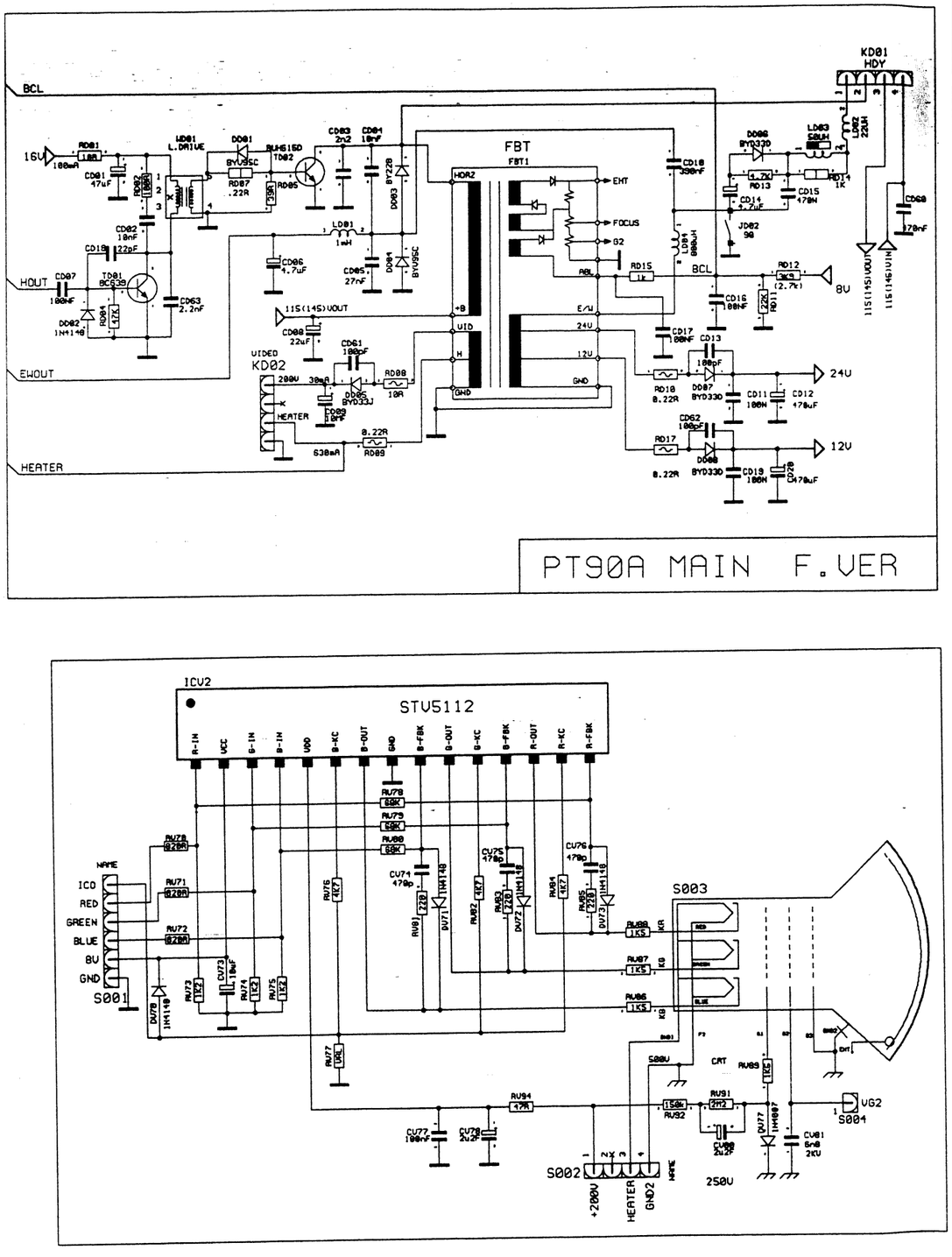

ICM1
MSP34xx
NC
AUD-OL-OUT
D-CTH-OUT1
D-CTR-OUT0
ADR-SEL
STANDBYQ
I2C-CL
I2C-DA
I2S-CL
I2S-WS
I2S-DA-OUT
I2S-DA-IN1
ADR-DA
ADR-WS
ADR-CL
DVSUP
DVSS
I2S-DA-IN2
NC
RESETQ
DACA-R
DACA-L
VREF2
DACM-R
DACM-L
DACM-SUB
XTAL-OUT
XTAL-IN
TESTEN
ANA-IN2+
ANA-IN-
ANA-IN1+
AVSUP
AVSS
MONO-IN
VREFTOP
SC1-IN-R
SC1-IN-L
SC2-IN-R
SC2-IN-L
SC3-IN-R
SC3-IN-L
AGNDC
AHVSS
CAPL-M
AHVSUP
CAPL-A
SC1-OUT-L
SC1-OUT-R
VREF1
SC2-OUT-L
SC2-OUT-R
FMM/FMC
SC1_IN_A
SC1_IN_L
SC2_IN_A
SC2_IN_L
AV1R
AV1L
SC1_OUT_L
SC1_OUT_R
SC2_OUT_L
SC2_OUT_R


KD01
HDY
FBT
FBT1
PT90A MAIN I.VER


SS19
TELEGRAM
AV1L
AV1R
SC1_IN_A
SC1_IN_L
SC2_IN_A
SC2_IN_L
SC1_OUT_L
SC1_OUT_R
SC2_OUT_L
SC2_OUT_R
FMM/FMC


115(145)VUIN
33V
16V
5V
8V
STDBY
5VST
5VD
30V
IP02
LM317
IP03
LM7805CV
IP01
TDA16846
VCC
OUT
GND
PUC
FC
N.C.
OTC
PCS
RZI
SAC
OCI
SYN
WP02
SHT1
IP05
TCDT1101G
AC01
POWER
ON/OFF
PON1
FPB1
3.15A/250V
LEP1
ECO
SE01
PTC1
PTH451A
KP02
STDBY1

PT90A MAIN F.VER



	ST92195 TXT	ST92185 NO TXT	ST9294 CC
R24	-	5K6	27K
R25	5K6	5K6	6K8
C17	JUMPER	22pF	220pF
C18	-	4n7	2n2
C19	470nF	4n7	JUMPER
C30	-	22p	-

STV2246/47/48

ST92195/92185/9294

u-CONTROLLER

AMOT

KEYB

SERVICE
SC01
KEYB
SCL
SDA
5V

IC01

P2.0/INT7
RESET
P0.7
P0.6
P0.5
P0.4
P0.3
P0.2/AIN4
P0.1
P0.0
P3.7/CSO
P3.6
P3.5
P3.4
BLUE
GREEN
RED
FB
SDA
SCL
VCC
JTDO
WSCF
WSCR
AVDD3
TEST
MCFM
JTCK

P2.1/INT5/AIN1
P2.2/INT0/AIN2
P2.3/INT6/VS1
P2.4/NMI
P2.5/AIN3/VS2
OSCIN
OSCOUT
P4.7/PWM7
P4.6
P4.5
P4.4
P4.3/PW3
P4.2
P4.1
P4.0
V_SYNC
H_SYNC
AVCC
PLLR
PLLF
VSS
AGND
CVBS1
CVBS2
JTMS
AVDD2
CVBS0
TXCF

5VD
5VA
CVBSOUT
HEATER
V_OSD
FB_OSD
L/L'
AV1/AV2
STDBY
B_OSD
G_OSD
R_OSD
FB_OSD
SDA
SCL
CLI

ST92195/92185

IA01
TDA2822M
IN-2
IN+2
IN+1
IN-1
GND
OUT2
+VS
OUT1

AUDOUT
MUTE
STDBY
P001
HS01

AUDIO AMPLIFIER

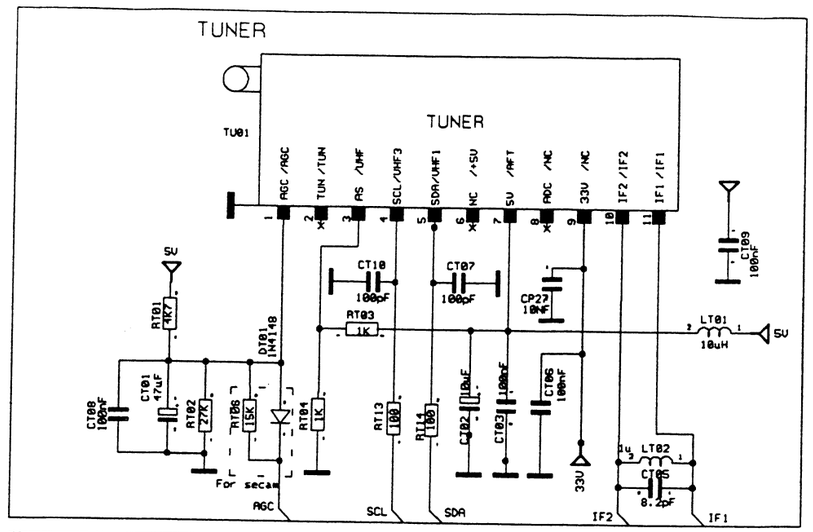
ID41
TDA1771
OUT
OSVS
TRIGIN
HEIGHT
GND
RAMPGEN
BUF.OUT
INV.IN
VS
FB.GEN

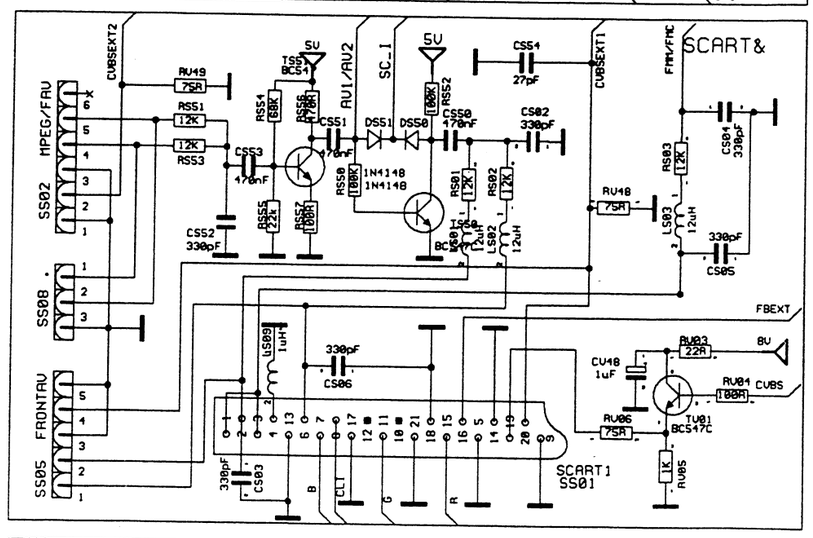
SD21
VERT
12V
24V
V_OSD
V_AMP

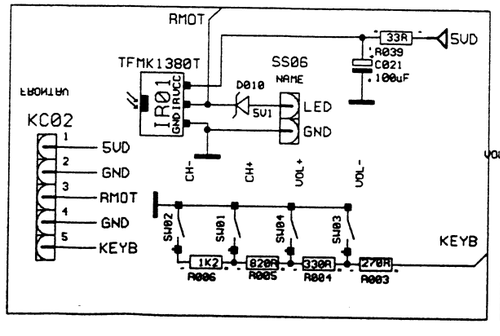
BCL HORIZONTAL

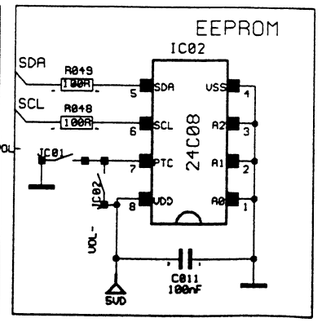
16V
HOUT
HEATER
KD01
KD02
FBT
FBT1
HOR2
EHT
FOCUS
G2
ABL
+B
VID
H
GND
E/W
110VOUT
8V

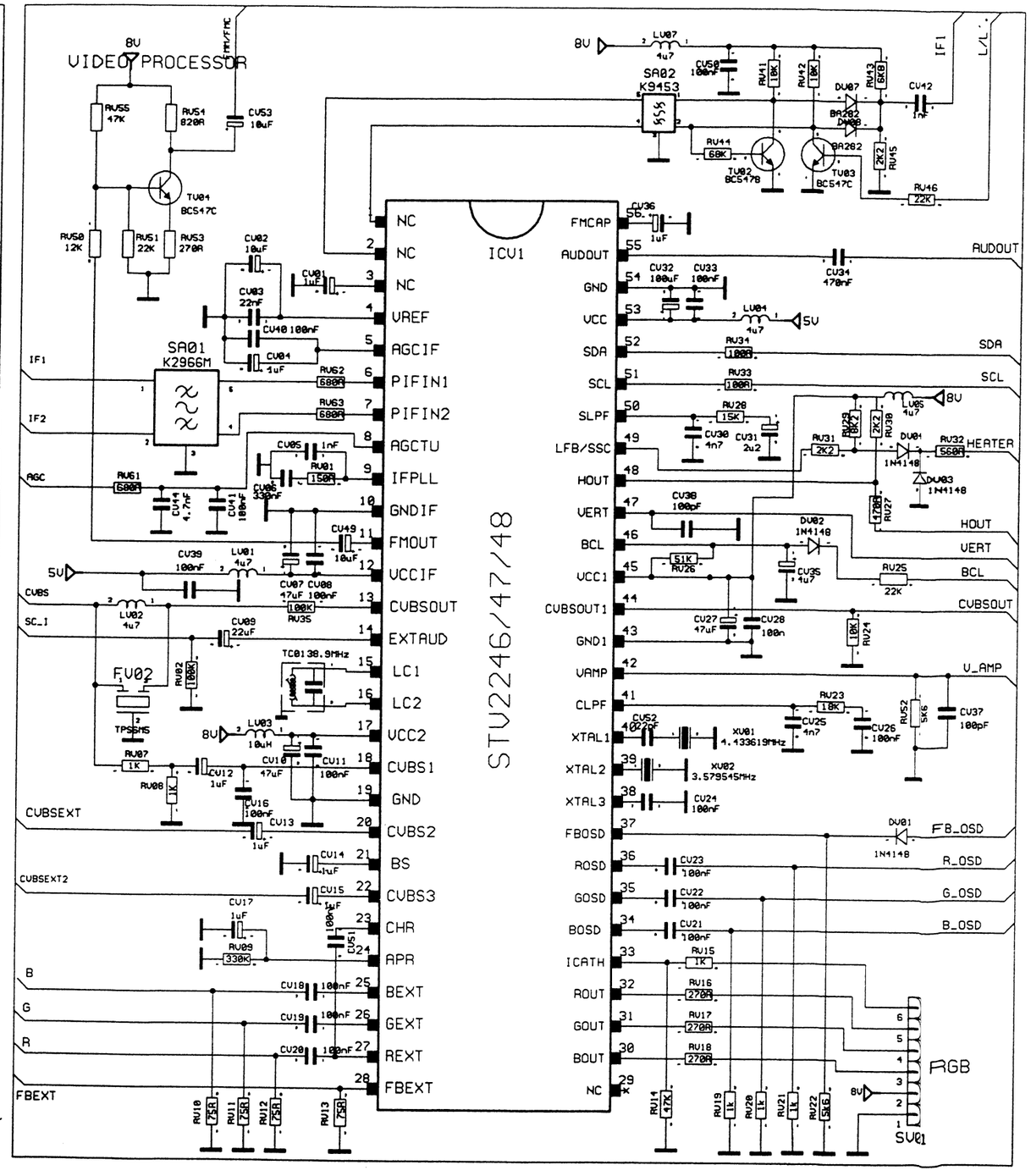
28/01/2002
PT90J CHASSIS (00TA083D)

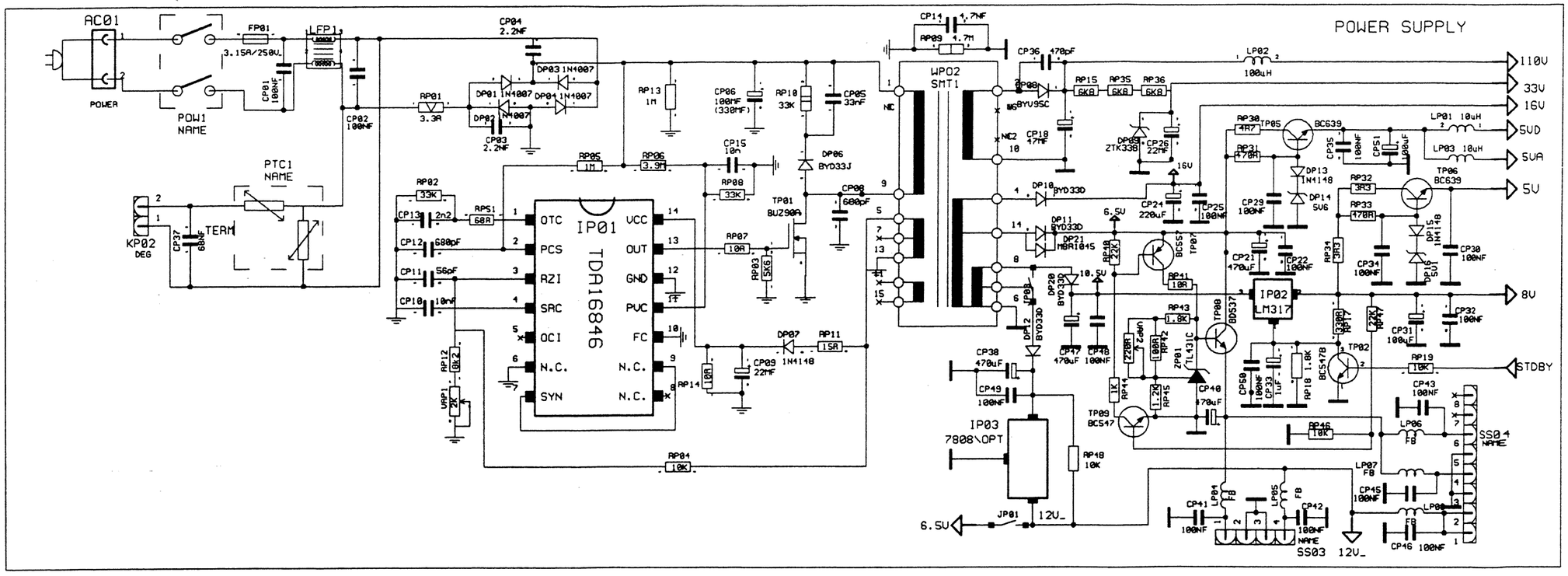

TUNER
TU01
AGC /AGC
TUN /TUN
AS /UHF
SCL /UHF3
SDA/UHF1
NC /+5U
5V /AFT
AGC /NC
33V /NC
IF2 /IF2
IF1 /IF1
5V
33V
AGC
SCL
SDA
IF2
IF1
For secam


SCART&
SS02 MPEG/FAV
SS08
SS05 FRONTAV
SCART1
SS01
FBEXT
CVBSEXT1
CVBSEXT2
FMV/FMC
AV1/AV2
SC_I
5V
8V
CVBS
B
G
R
CLI


RMOT
TFMK1380T
SS06
NAME
LED
GND
5V1
5VD
33R
C021
100uF
KC02
GND
RMOT
KEYB
CH-
CH+
VOL+
VOL-
SW02
SW01
SW04
SW03
1K2
820R
330R
270R
R006
R005
R004
R003


EEPROM
IC02
24C08
SDA
SCL
VSS
A2
A1
A0
VDD
PTC
R049
R048
100R
IC01
VOL
VOL-
5VD
C011
100nF


VIDEO PROCESSOR
ICV1
STV2246/47/48
SA01
K2966M
SA02
K9453
TV01
BC547C
TV02
BC547B
TV03
BC547C
TV04
BC547C
NC
VREF
AGCIF
PIFIN1
PIFIN2
AGCTU
IFPLL
GNDIF
FMOUT
VCCIF
CVBSOUT
EXTAUD
LC1
LC2
VCC2
CVBS1
GND
CVBS2
BS
CVBS3
CHR
APR
BEXT
GEXT
REXT
FBEXT
FMCAP
AUDOUT
GND
VCC
SDA
SCL
SLPF
LFB/SSC
HOUT
VERT
BCL
VCC1
CVBSOUT1
GND1
VAMP
CLPF
XTAL1
XTAL2
XTAL3
FBOSD
ROSD
GOSD
BOSD
ICATH
ROUT
GOUT
BOUT
NC
TC0138.9MHz
XV01
4.433619MHz
XV02
3.579545MHz
FV02
TPS5MS
8V
5V
IF1
IF2
AGC
CVBSEXT
CVBSEXT2
SV01
RGB
F8_OSD
R_OSD
G_OSD
B_OSD
V_AMP
AUDOUT
SDA
SCL
HOUT
VERT
BCL
CVBSOUT
HEATER


POWER SUPPLY
AC01
POWER
FP01
3.15A/250V
LFP1
POW1
NAME
CP01 100NF
CP02 100NF
CP04 2.2NF
DP01 1N4007
DP02 1N4007
DP03 1N4007
DP04 1N4007
CP03 2.2NF
RP01 3.3R
PTC1
NAME
KP02
DEG
CP37 680NF
TERM
RP02 33K
CP13 2n2
CP12 680pF
CP11 56pF
CP10 10nF
RP05 1M
RP06 3.9M
RP13 1M
CP06 100NF (330NF)
CP15 10n
RP08 33K
RP10 33K
CP05 33nF
DP06 BYD33J
TP01 BUZ90A
RP07 10R
RP03 5K6
CP08 680pF
RPS1 68R
RP12 6K2
VRP1 2K
IP01
TDA16846
OTC
PCS
RZI
SRC
OCI
N.C.
SYN
VCC
OUT
GND
PUC
FC
N.C.
N.C.
DP07 1N4148
RP11 15R
CP09 22NF
RP14 10R
RP04 10K
CP14 1.7NF
RP09 1.7M
WP02
SMT1
NC
NC2
CP36 470pF
DP08 BYV95C
RP15 6K8
RP35 6K8
RP36 6K8
CP18 47NF
DP09 ZTK33B
CP26 22NF
16V
DP10 BYD33D
DP11 BYD33D
DP21 MBR1645
6.5V
CP24 220uF
CP25 100NF
RP40 22K
BC557
TP07
RP41 10R
IP02
LM317
RP43 1.8K
TP08 BD537
DP12 BYD33D
DP20 BYD33D
10.5V
CP47 470uF
CP48 100NF
CP38 470uF
CP49 100NF
IP03
7808\OPT
RP18 10K
ZP01 TL431C
RP42 220R
RP44 1K
RP45 1.2K
TP09 BC547
CP40 470uF
JP01
6.5V
12V_
LP02 100uH
110V
33V
16V
LP01 10uH
5VD
LP03 10uH
5VA
5V
8V
STDBY
RP30 4R7
TP05 BC639
RP31 470R
DP13 IN4148
DP14 5V6
CP35 100NF
CP51 100uF
RP32 3R3
RP33 470R
TP06 BC639
DP15 IN4148
DP16 5V1
CP29 100NF
CP21 470uF
CP22 100NF
RP34 3R3
CP34 100NF
CP30 100NF
CP31 100uF
CP32 100NF
RP47 330R
RP19 10K
TP02 BC547B
RP17 22K
RP18 1.8K
CP50 100NF
CP33 1uF
CP43 100NF
RP46 10K
LP06 FB
LP07 FB
LP08 FB
SS04
NAME
CP45 100NF
CP46 100NF
LP04 FB
LP05 FB
CP41 100NF
CP42 100NF
NAME
SS03
12V_

I901 SRAM512x8 (J901 (ST SRAM), J902 (OTHER), J903 (OTHER), J905 (ST SRAM))

I902 M27C2001

I903 ST92R195B

I904 PCF8593 (X901 32.768kHz)

I905 4052

I906 LE33AB/C

I907

I908 SDA9589X DE/DF//DE/DF

I909 TL7757

2nd Tuner

FROM MAIN BOARD

NOTE: SOME COMPONENTS ARE MOUNTED ON MAIN BOARD

DATE:	PT90A EPG	VER.
12.00	00TA047	B